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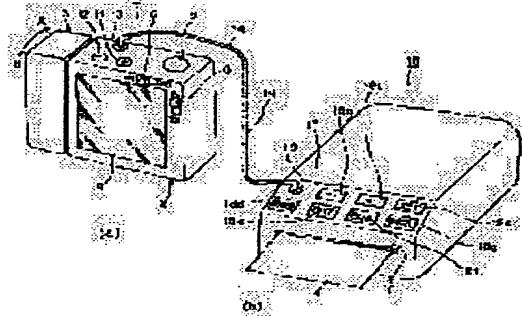
(21)Application number : 08-280229 (71)Applicant : CASIO COMPUT CO LTD  
 (22)Date of filing : 30.09.1996 (72)Inventor : ISHIKAWA TOMOHISA

## (54) PRINTER AND ITS PRINT SYSTEM

### (57)Abstract:

**PROBLEM TO BE SOLVED:** To provide the printer and its print system, in which the system scale is made small and a print operation for a photographic image is simplified by especially connecting directly a digital camera to the printer, so as to exclude a personal computer from the print system with respect to the printer for an image, including a photographic image and its print system.

**SOLUTION:** The printer 15 is directly connected to a digital camera 1 to use a view finder 4 of the digital camera 1, on which a printer operation menu for print processing is displayed and a photographic image is displayed, a format is selected on the menu and a photographic image printed according to a format is selected and the print processing is made according to the selection. Thus, the printer and its print system are provided, where no display section is required for the printer 15 and the need for a personal computer or the like is also eliminated. Through the constitution above, the scale of the print system is made compact, and the operability of the print processing is improved.



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## CLAIMS

## [Claim(s)]

[Claim 1] The printing system characterized by providing the following. The picture for printer operation which consists of two or more format selection screens. A storage means to memorize the real picture corresponding to these formats of two or more. An output means to output the aforementioned picture for printer operation to a digital camera. The display means of the digital camera which displays the picture for printer operation outputted by this output means. The read-out control means which read the photograph memorized to this digital camera. A selection means to choose a desired format from two or more aforementioned format selection screens, and to choose a desired photograph from the aforementioned digital camera. The real picture corresponding to the format chosen with this selection means is read from the aforementioned storage means. A printing picture creation means to read the photograph chosen with this selection means from the aforementioned digital camera by the aforementioned read-out control means, and to create a printing picture from both data, and a printing means to print the picture created with this printing picture creation means on the recording paper.

[Claim 2] The aforementioned picture for printer operation is a printing system according to claim 1 which is compressed data, and is characterized by what is displayed on the aforementioned display means after data extension is carried out within a digital camera.

[Claim 3] The printing system according to claim 1 characterized by expressing two or more aforementioned formats for the display means of the aforementioned digital camera as a sign.

[Claim 4] The printing system according to claim 1 characterized by expressing the aforementioned photograph for the display means of the aforementioned digital camera as a sign.

[Claim 5] The aforementioned picture for printer operation is a printing system according to claim 1 characterized by being a layout picture at the time of printing a photograph on the aforementioned recording paper.

[Claim 6] The aforementioned picture for printer operation is a printing system according to claim 1 characterized by being a picture for selection containing a calendar.

[Claim 7] The aforementioned picture for printer operation is a printing system according to claim 1 characterized by being a picture for selection including a card picture.

[Claim 8] The aforementioned picture for printer operation is a printing system according to claim 1 characterized by being a selection picture including the picture for mini label printing.

[Claim 9] The aforementioned picture for printer operation is a printing system according to claim 1 characterized by being a picture for illustration composition.

[Claim 10] The aforementioned picture for printer operation is a printing system according to claim 1 characterized by being a picture for list printing.

[Claim 11] The picture electrical signal which carried out photo electric translation of providing the following based on the light figure which is photoed by the lens equipment by which it is characterized, and is connected is changed into a digital signal. While memorizing to an image memory by using this digital signal as photograph data, memorizing the output of this image memory in the memory for a display temporarily and displaying the photograph data of this memory for a display on a display means. The aforementioned printer connected to the digital camera which is equipped with the means of communications and control means which transmit and receive a control signal and the aforementioned photograph data between the printers connected outside, memorizes a photograph as digital image data, and is reproduced through the aforementioned means of communications. The picture for printer operation which consists of two or more format selection screens. A storage means to memorize the real picture corresponding to these formats of two or more. The output means which outputs the aforementioned picture for printer operation to the aforementioned digital camera, and is displayed on the display means of this digital camera. The read-out control means which direct read-out of the photograph memorized by this digital camera. A selection means to choose a desired format from two or more aforementioned format selection screens, and to make a desired photograph choose it as the aforementioned digital camera. The real picture corresponding to the format chosen with this selection means is read from the aforementioned storage means. A printing picture creation means to read the photograph chosen with this selection means from the aforementioned digital camera by the aforementioned read-out control means, and to create a printing picture from both data, and a printing means to print the picture created with this printing picture creation means on the recording paper.

[Claim 12] It is the printer according to claim 11 characterized by for the real picture memorized by the aforementioned storage means being compressed data, and the aforementioned printing picture creation means carrying out extension processing of the aforementioned real picture.

[Claim 13] It is the printer according to claim 11 characterized by for the photograph read from the aforementioned digital camera being compressed data, and the aforementioned printing picture creation means carrying out extension processing of the aforementioned photograph.

[Claim 14] The aforementioned picture for printer operation is a printer according to claim 11 characterized by being a layout picture at the time of printing a photograph on the aforementioned recording paper.

[Claim 15] The aforementioned picture for printer operation is a printer according to claim 11 characterized by being a picture for selection containing a calendar.

[Claim 16] The aforementioned picture for printer operation is a printer according to claim 11 characterized by being a picture for selection including a card picture.

[Claim 17] The aforementioned picture for printer operation is a printer according to claim 11 characterized by being a selection picture including the picture for mini label printing.

[Claim 18] The aforementioned picture for printer operation is a printer according to claim 11 characterized by being a picture for illustration composition.

[Claim 19] The aforementioned picture for printer operation is a printer according to claim 11 characterized by being a picture for list printing.

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## DETAILED DESCRIPTION

## [Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] this invention relates to the printer using the display of a digital camera, and its printing system.

[0002]

[Description of the Prior Art] A personal computer is begun and multimedia-ization is progressing between [ various ] electronic equipment today. In addition to realization of application software, such as the conventional database, a word processor, and a spreadsheet, especially the personal computer has the composition that communication facility, such as reproduction of animations, such as reproduction of static images, such as a photograph, and a television picture, karaoke, and the Internet, etc. is easily realizable, by increase of memory, and built-in of an MPEG circuit or a modem.

[0003] Instead of the so-called conventional analog camera, the digital camera which can process a photograph directly with a personal computer is marketed especially widely recently. That is, the digital image photoed with the digital camera can be easily processed by building the software of exclusive use into a personal computer. For example, when printing the photograph incorporated in the personal computer from the digital camera, printer equipment can be connected to a personal computer and the photograph wished to have simply can be printed by specifying a photograph.

[0004]

[Problem(s) to be Solved by the Invention] In the above-mentioned conventional printing system, when the photograph of a digital camera was printed, the photography picture of a digital camera was once incorporated in the personal computer, and it processed with the software of exclusive use, it outputted to printer equipment, and printing processing was performed. Therefore, the personal computer was indispensable in order to print the photograph of a digital camera conventionally.

[0005] Moreover, the software for incorporating a photograph in a personal computer from a digital camera, performing an image processing, and outputting to printer equipment was also required of the conventional system. Therefore, printing processing was complicated in case the photograph of a digital camera was printed.

[0006] Furthermore, in the conventional printing system, when the picture photographed with the digital camera is printed, while needing a digital camera, a personal computer, and three equipments of printer equipment and enlarging the system, operation was complicated, operability was bad and anyone was able to print quickly easily.

[0007] this invention is offering the printer which carried out the direct file of the digital camera to the printer, excepted the personal computer from the printing system, miniaturized the system, and simplified printing operation of a photograph, and its printing system in order to solve the above-mentioned technical problem.

[0008]

[Means for Solving the Problem] A storage means to memorize the picture for printer operation which consists of two or more format selection screens, and the real picture corresponding to these formats of two or more in order that invention according to claim 1 may solve the above-mentioned technical problem. An output means to output the aforementioned picture for printer operation to a digital camera, and the display means of the digital camera which displays the picture for printer operation outputted by this output means. The read-out control means which read the photograph memorized to this digital camera. A selection means to choose a desired format from two or more aforementioned format selection screens, and to choose a desired photograph from the aforementioned digital camera. The real picture corresponding to the format chosen with this selection means is read from the aforementioned storage means. A printing picture creation means to read the photograph chosen with this selection means from the aforementioned digital camera by the aforementioned read-out control means, and to create a printing picture from both data. It can attain by offering the printing system which has a printing means to print the picture created with this printing picture creation means on the recording paper.

[0009] That is, the picture for printer operation which has two or more format selection screens is displayed on the display means of the digital camera which sends the picture for printer operation memorized for the storage means prepared in the printer side to a digital camera side by the output means by the side of a printer, for example, consists of a color LCD etc. And one format is chosen from two or more formats by the selection means, looking at this display, and the photograph of a digital camera is chosen further. Thus, it is the composition which prints the printing picture which the selected format picture was read as a real picture which corresponds from the storage means in a printer, and the photograph was read from the digital camera, and was created by the printing picture

creation means on the recording paper.

[0010] Thus, by constituting, a direct printer is connected to a digital camera, the picture for printer operation displayed on a digital camera by the control from a printer can be seen, the format for printing and a photograph can be chosen, and the picture which contains a photograph through a personal computer can be printed easily.

[0011] After invention according to claim 2 making more concrete invention of the claim 1 above-mentioned publication, and the aforementioned picture for printer operation being compressed data and carrying out data extension within a digital camera, it is the composition displayed on the aforementioned display means.

[0012] For this reason, the extension circuit of data is established in the digital camera used for this printing system. Thus, by constituting, data transfer of the picture for printer operation sent to a digital camera from a printer can be performed at high speed, and memory space in a printer can also be made small.

[0013] Invention according to claim 3 makes more concrete invention of the claim 1 above-mentioned publication, and, as for the display means of the aforementioned digital camera, expresses two or more aforementioned formats as a sign.

[0014] Here, the above-mentioned sign display consists of a parameter of a format selection screen, a notional sign, etc. Thus, by constituting, the operability at the time of choosing a format is improved.

[0015] It is the composition which invention according to claim 4 also makes more concrete invention of the claim 1 above-mentioned publication, and displays for example, the aforementioned photograph on the display means of the aforementioned digital camera with a sign. Thus, by constituting, the operability of selection of a photograph can be improved like the above.

[0016] Moreover, as indicated from a claim 5 to a claim 10, it is the selection picture which is a picture for selection which is a picture for selection which the above-mentioned picture for printer operation is a layout picture at the time of printing a photograph for example, on the aforementioned recording paper, and contains a calendar, and includes a card picture, and includes the picture for mini label printing, and it is a picture for illustration composition, and is a picture for list printing.

[0017] In order that invention according to claim 11 may solve the above-mentioned technical problem, the picture electrical signal which carried out photo electric translation based on the light figure which is photoed by lens equipment and connected is changed into a digital signal. While memorizing to an image memory by using this digital signal as photograph data, memorizing the output of this image memory in the memory for a display temporarily and displaying the photograph data of this memory for a display on a display means. It is the aforementioned printer connected to the digital camera which is equipped with the means of communications and control means which transmit and receive a control signal and the aforementioned photograph data between the printers connected outside, memorizes a photograph as digital image data, and is reproduced through the aforementioned means of communications. A storage means to memorize the picture for printer operation which consists of two or more format selection screens, and the real picture corresponding to these formats of two or more. The output means which outputs the aforementioned picture for printer operation to the aforementioned digital camera, and is displayed on the display means of this digital camera. The read-out control means which direct read-out of the photograph memorized by this digital camera. A selection means to choose a desired format from two or more aforementioned format selection screens, and to make a desired photograph choose it as the aforementioned digital camera. The real picture corresponding to the format chosen with this selection means is read from the aforementioned storage means. A printing picture creation means to read the photograph chosen with this selection means from the aforementioned digital camera by the aforementioned read-out control means, and to create a printing picture from both data. It can attain by offering the printer which has a printing means to print the picture created with this printing picture creation means on the recording paper.

[0018] This invention is not a printing system, it shows the composition of only a printer, is prepared in a printer, and consists of a \*\*\*\*\* storage means, an output means, a selection means, read-out control means, a printing picture creation means, and a printing means. And the above-mentioned output means outputs the picture for printer operation which has two or more format selection screens memorized for a storage means, a selection means chooses a desired format and a photograph from a format selection screen, the selected format picture reads as a real picture correspond from the storage means in a printer, it reads from a digital camera and a photograph creates a printing picture by the printing picture creation means.

[0019] Thus, also by constituting, a direct printer is connected to a digital camera, for example, the picture for printer operation displayed on a digital camera by control from a printer can be seen, the format for printing and a photograph can be chosen, and the picture which contains a photograph through a personal computer can be printed easily.

[0020] The real picture which invention according to claim 12 makes invention of the claim 11 aforementioned publication more concrete, and is memorized by the aforementioned storage means is compressed data, and the aforementioned printing picture creation means is composition which carries out extension processing of the aforementioned real picture. After following, for example, preparing an extension circuit in a printer for this processing and carrying out extension processing of the real image data, creation of a printing picture is performed.

[0021] The photograph which invention according to claim 13 makes invention according to claim 11 more concrete, and is read from the aforementioned digital camera is compressed data, and the aforementioned printing picture creation means is composition which carries out extension processing of the aforementioned photograph. Therefore, after using the above-mentioned extension circuit prepared for example, in the printer also in this case and carrying out extension processing of the real image data, creation of a printing picture is performed.

[0022] In addition, as the printer of this invention is indicated from a claim 14 to a claim 19, it is the selection picture which is a picture for selection which is a picture for selection which the above-mentioned picture for printer operation is a layout picture at the time of printing a photograph for example, on the aforementioned recording paper, and contains a calendar, and includes a card picture, and includes the picture for mini label printing, and it is a picture for illustration composition, and is a picture for list printing.

[0023] Invention according to claim 20 — recording-mode \*\*\*\* — with the finder function which displays the static-image data under photography for a display means The digital camera which has the value monitor which displays static-image data [ finishing / photography record ] on the aforementioned display means in a playback mode is made into an external device. A storage means to memorize the operation indicative data which is the printer printed in response to a transfer of image data [ finishing / photography record ] from the aforementioned digital camera, and is needed for printing operation. The aforementioned operation indicative data memorized by this storage means is transmitted to the aforementioned daisy dripping camera, and it is characterized by having the control means controlled to make it display on the aforementioned display means to the aforementioned digital camera.

[0024] Printing operation can be performed easily, looking at the display by the side of a camera, whether it is what has the inadequate display of a printer small or is the case where a display does not exist at all, since the display means of the digital camera which combines a finder function and a value monitor can be used as a monitor of the indicative data about printing operation of a printer according to invention of this claim 20.

[0025]

[Embodiments of the Invention] Hereafter, the example of 1 operation form of this invention is explained in detail using a drawing. Drawing 1 (a) and (b) It is the appearance perspective diagram showing the state where the digital camera (electronic still camera) and printer (henceforth printer equipment) in the example of 1 operation form were connected, and is this drawing (a). A digital camera is shown and it is this drawing (b). Printer equipment is shown.

[0026] First, a digital camera 1 is this drawing (a). It consists of a camera book soma 2 and the lens unit section 3 so that it may be shown. A manipulator style portion is collected by the upper surface and the tooth back (near side of drawing 1), and no front faces (other side of drawing 1) are arranged for the camera book soma 2 besides the mark or the sheathing pattern.

[0027] The viewfinder 4 which consists in the center of a color LCD greatly is arranged in the tooth back of the camera book soma 2, and the slid type switches 5 and 6 are arranged in the near. First, an electric power switch 5 is arranged above a viewfinder 4, and the mode exchange key 6 for changing a mode of operation to the method of the right at picture photography mode (RE) and image reconstruction mode (PL) is arranged. and — a camera — a book — a soma — two — the upper surface — \*\*\*\* — a shutter release — nine — photography — record — finishing — an image — one by one — a call — appearance — carrying out — seeing — a sake — “— + —” — a key — 11 — and — present — seeing — \*\*\*\* — a picture — a front — a picture — returning — a sake — “— — —” — a key — 12 — arranging — having — the — near — a front face The plug prepared in the end of a telecommunication cable 14 is inserted in the communication terminal 13.

[0028] the lens unit section 3 — this drawing (a) \*\*\*\* — the front face is equipped with the lens although it is not visible since it is the other side This lens unit section 3 is formed possible [ rotation ] to the camera book soma 2, rotates at 90 degrees in the direction of arrow A of this drawing, and rotates 180 degrees in the direction of arrow B of this drawing. If 180 degrees rotates in the direction of arrow B and a lens turns [ direction ] to a tooth back, although a lens position will become reverse, the posture of this lens is detected by the internal circuitry, and a screen display of the image under photography is automatically corrected and carried out to an erection picture.

[0029] On the other hand, printer equipment 15 is this drawing (b). It has form insertion-cum-the exhaust port 16 which serves as the insertion mouth which inserts the recording paper P in the front face (near side of this drawing) of this soma, and the exhaust port which discharges the recording paper [ finishing / printing ] P so that it may be shown. The upper surface front of this printer equipment 15 inclines to the front a little, and a control panel 17 is formed. seven operation keys 18 (“[ — ]” key 18a —) of a push button type [ top / control-panel 17 / this ], “+” key 18b, “SET” key 18c, “POWER” key 18d, “EASY” key 18e, “MENU” key 18f, “BACK” key 18g, and the communication terminal 19 are arranged. The plug prepared in the other end of the above-mentioned telecommunication cable 14 is inserted in the communication terminal 19.

[0030] It sets to the digital camera 1 which has the above appearance composition, and printer equipment 15, and is drawing 2 (a). The circuit block diagram of a digital camera 1 is shown, and it is this drawing (b). The circuit block diagram of printer equipment 15 is shown.

[0031] This drawing (a) In a circuit block diagram, CCD (charge-coupled device)21 is an image pick-up element which changes and outputs a video signal to an analog electrical signal, and photographs the picture inputted through a non-illustrated lens. A drive circuit (driver 22) is a circuit which drives CCD21, and drives CCD21 according to the timing signal outputted from a timing generator 20.

[0032] The analog-to-digital conversion circuit (henceforth an A/D converter) 24 is a circuit which changes into a digital signal the analog signal outputted through amplifier 23 from CCD21, and changes the output of CCD21 into a digital image signal. Moreover, DRAM25 memorizes the changed digital image signal temporarily.

Compression/extension section 26 compresses an above-mentioned digital image signal by coding processing. In addition, contrary to \*\*\*\*, compression/extension section 26 performs decryption processing to a digital image signal, and also performs extension processing of data. Moreover, an image memory 27 is memory which carries out the screen storage of many digital image signals compressed in compression/extension section 26, for example.

consists of flash memories.

[0033] The video signal generating section 32 adds a synchronizing signal to a digital image signal, and generates a digital video signal. VRAM33 is memory which memorizes a digital video signal. The digital analogue-conversion circuit (henceforth a D/A converter) 34 is a circuit which changes into an analog video signal the digital video signal outputted from the video signal generating section 32, and is outputted to the color (liquid crystal display) LCD 35 which is a display means. A color LCD 35 drives liquid crystal based on the analog video signal inputted through amplifier 36 from D/A converter 34, and displays a photograph.

[0034] In addition, CG (character generator)37 stores numeric data, cursor data, etc. for displaying the image data of an image memory 27 on a color LCD 35.

[0035] On the other hand, ROM28 memorizes the program which carries out drive control of the digital camera 1, and outputs this program to CPU30. CPU30 operates based on the program memorized to ROM28, and controls a digital camera 1. In addition, RAM29 is memory which memorizes the middle data of data processing etc. temporarily in the case of control processing of CPU30. In addition, CPU30 operates as mentioned above based on the program memorized to ROM28, uses the work area of RAM29, and controls each part according to the key stroke signal inputted from the key input section 31. In addition, the various keys 5 arranged at the digital camera 1 of the above-mentioned [ this key input section 31 ] - 6 grades correspond. In addition, I/O Port 38 is an interface which carries out input/output control of the picture signal changed into the serial signal.

[0036] Here, if operation of the digital camera 1 of above-mentioned composition is explained briefly, an image incorporation key (shutter release 9) is \*\*\*\*(ed) first, and a timing signal is outputted from a timing generator 21, and by CCD21, an external image will be picturized and it will incorporate to CCD21. The image data incorporated by CCD21 is memorized by DRAM25 as a digital image signal as mentioned above, performs generation processing of a luminance signal and a chrominance signal to this data, and creates a luminance signal and a chrominance signal from a picture signal. This luminance signal and chrominance signal are transmitted to compression/extension section 26, the data compression of a luminance signal and the chrominance signal is carried out, and it memorizes to an image memory 27.

[0037] Next, in case the image data memorized to the image memory 27 is reproduced, a reproduction key (RE key 8) is operated, an above-mentioned compression picture signal (a compression luminance signal and chrominance signal) is read from an image memory 27, and it transmits to compression/extension section 26. And it is transmitted to the video signal generating section 32, the digital video signal which added the synchronizing signal to the digital image signal by the video signal generating section 32 is generated, and the digital image signal which consists of the luminance signal elongated in this compression/extension section 26 and a chrominance signal once writes this signal in VRAM33, outputs the written-in digital video signal to a color LCD 35 through D/A converter 34 and amplifier 36, and displays it on a color LCD 35.

[0038] Next, drawing 2 (b) The composition of the shown printer equipment 15 is explained. Printer equipment 15 consists of the image memory 41 connected to CPU40 and CPU40 through the bus 49, the extension section 42, the selection section 43, the key input section 44, I/O Port 45, ROM46, the color printer section 47, and RAM48 grade.

[0039] Above-mentioned I/O Port 45 consists of a circuit which has serial communication facility, generally is built in LSI of a one-chip CPU, and transmits and receives data with the exterior. It connects with the general-purpose port of CPU40, and the key input section 44 is drawing 1 (b). The key stroke signal from seven operation keys 18 of the shown control panel 17 is outputted to CPU40. Based on this key stroke signal, various processings based on control of CPU40 are performed. About the function of each [ these ] key stroke signal, it mentions later.

[0040] ROM46 is equipped with the image data field which stored the compressed data of various pictures for printer operation, such as real image data, such as a program field by CPU40 which stored programs of operation, such as communications processing, print-data creation processing, printing processing, and calender creation processing, for example, for example, a compression indicative data and compression background data, and CG, and a layout, a mini label, and a postcard. In addition, each above-mentioned picture for printer operation has two or more format selection screens, respectively.

[0041] The selection section 43 is operating each above-mentioned operation key 18 based on the above-mentioned picture for printer operation displayed on a viewfinder 4, chooses each program in ROM46 later mentioned based on the key stroke signal inputted from the key input section 44, or the picture for printer operation, and chooses each format picture which corresponds further.

[0042] An image memory 41 is memory which once stores the compression image data which consists of a luminance signal which is read from the image memory 27 of a camera 1, and is transmitted, and a chrominance signal. The extension section 42 elongates the background image which has well-known picture extension functions, such as MPEG, for example, is memorized to ROM46, and the real picture corresponding to the selected format picture. Moreover, extension processing of the photograph read from a digital camera 1 is carried out. That is, it is because it is necessary to expand to a predetermined size in case a printing picture is created, since the real picture memorized to ROM46 and the photograph outputted from a digital camera 1 are memorized and transmitted with the gestalt of compressed data.

[0043] The flow created according to the print-data creation processing program of ROM46 after extension processing of the image data memorized by the work field for data processing where CPU40 performs RAM48, and the image memory 41 is carried out in the extension section 42 (Y). It has the picture composition processing field which carries out synthetic processing of the ornament data, such as MAZENDA (M), a print-data storage region

which memorizes the print data of each color of cyanogen (C), and these print data, background data with which it is ornamented, the data storage field set up by CPU40.

[0044] The color printer section 47 is the printer engine section, and the motor driver which drives a DC motor, a stepping motor, etc., a print head, and various sensors are connected. A sensor consists of an optical sensor, a mechanical contact type sensor, etc., and performs detection of the ink ribbon position of three colors of the yellow for color printing (Y), a Magenta (M), and cyanogen (C), and detection of the form P inserted.

[0045] Drawing 3 is drawing showing the connection composition of a typical member in an above-mentioned driver or a sensor. That is, the motor 50 for heads is connected to CPU40 through motor driver 50', the motor 51 for ribbons is connected through motor driver 51', and the motor 52 for form feeds is connected through motor driver 52'. The motor 50 for heads moves a print head between a printing position and a non-printing position, and a print head presses a form through an ink ribbon in a printing position. The motor 51 for ribbons is a motor which conveys an ink ribbon and sends yellow (Y), a Magenta (M), and the ink section of each color of cyanogen (C) into the press section of a print head and a form one by one. Moreover, the motor 52 for form feeds is a motor made to move Form P in the direction of vertical scanning for every line.

[0046] In addition, the print head 53 linked to CPU40 consists of 960 heating elements constituted from density of 300dpi (dot per inch) by the ceramic board, and a driver IC which carries out ON/OFF drive of it individually.

Moreover, a sensor 54 is a sensor which detects that Form P was inserted in printer equipment.

[0047] In the basis of control of CPU40, and the printing timing in above-mentioned every line, predetermined carries out time ON of the heating element of the position which should be printed based on the image data in RAM48, and the color printer section 47 transmits generation of heat of the specified quantity to an ink ribbon, imprints the ink of a predetermined color in a form, and creates a printing picture.

[0048] Next, the function of each key prepared in printer equipment 15 is explained. First, the power supply of a printer 15 is turned on / turned off "POWER" key 18d.

[0049] Next, during the display of the above-mentioned initial screen, when "EASY" key 18e carries out the depression of this, it is a key which is switched to an "easy print mode" regardless of selection of a format. This "easy print mode" is a processing mode which prints the reproduction picture [finishing / photography] displayed on the viewfinder 4 of a digital camera 1 as it is.

[0050] Next, it has the function to return the picture displayed on a viewfinder 4 to an initial screen, "MENU" key 18f. Therefore, depression operation is invalid during the display of the initial screen. Moreover, it has the function returned to the screen in front of [ of the screen currently displayed on the viewfinder 4 ] one "BACK" key 18g.

[0051] Moreover, "SET" key 18c is a definite key, and the format displayed on a viewfinder 4 by carrying out the depression of this "SET" key 18c during selection processing is decided, and it becomes a selection screen.

[0052] "[ furthermore, / - ]" key 18a and "+" key 18b perform selection of a format, the change of a page mentioned later. In addition, "+" key 18b is a feed forward, and "-" key 18a is opposite direction delivery.

[0053] In the printer equipment 15 and its printing system of the above composition, the processing operation is explained below. Drawing 4 is a flow chart explaining processing operation of this example of an operation form.

[0054] First, in drawing 4, if "POWER" key 18d of printer equipment 15 is turned on, control processing of printer equipment 15 will begin. That is, if "POWER" key 18d turns on, CPU40 will perform initial-setting processing and it will judge whether the printer equipment 15 of this example is first connected to the digital camera 1 (Step 1 (S shows this drawing hereafter)). This judgment judges connection of a telecommunication cable 14, when CPU40 checks I/O Port 45. Here, if printer equipment 1 is not connected to the digital camera 1 through the telecommunication cable 14 (S1 is N (no)), connection of a digital camera 1 is checked.

[0055] On the other hand, if the digital camera 1 is connected to the printer equipment 15 of this example, the model of digital camera 1 connected to the degree will be checked (S2). This type of check checks a code from the information inputted through a telecommunication cable 14, and CPU40 judges the model of digital camera 1 connected from this code. Next, CPU40 performs the display instruction of a top menu screen to a viewfinder 4. (S3). Based on this instruction, the compressed data of a top menu screen is read from ROM46, and it is outputted to a digital camera 1 through a bus 49 and a telecommunication cable 14. Compression/extension section 26 develops, and after the compressed data of the top menu screen outputted to the digital camera 1 is changed into the video data which corresponds in the video signal generating section 32, it is displayed on a color LCD 35 (viewfinder 4).

[0056] Drawing 5 is drawing showing the state where the top menu screen was displayed in the viewfinder 4 of a digital camera 1. As shown in this drawing, a total of six icons is displayed on two steps of upper and lower sides by the top menu screen. The English character of "LAYOUT" is \*\*\*\*(ed) downward by the icon at the left end of an upper case. Moreover, the English character of "CALENDAR", the icon by which the English character of "POSTCARD" was \*\*\*\*(ed) by the English character of "MINI" and the lower berth from left-hand side at the next icon, the icon by which the English character of "COLLAGE" was \*\*\*\*(ed) further, and the icon by which the English character of "NIDEX" was \*\*\*\*(ed) are further displayed on the next icon. Moreover, in this initial screen, the line-like cursor C directs the icon of a layout.

[0057] Next, CPU40 waits for the key input from an operator (S4 is N (no)). In addition, Cursor C is located in the layout display of the top menu screen displayed on a viewfinder 4 as mentioned above, cursor can be moved to the right on a top menu screen by carrying out the depression of the "+" key 18b, and cursor can be moved to the left by carrying out the depression of the "-" key 18a. In addition, CPU40 outputs a processing instruction to a digital camera 1 side through a telecommunication cable 14 (S4 is Y and S5), reads the graphic character of Cursor C from

CG37 in a digital camera 1, and displays this move instruction on the top menu screen of a color LCD 35 (viewfinder 4). In addition, if the depression of "MENU" key 18f or the "BACK" key 18g is carried out in the state of an above-mentioned top menu screen display, it returns to a key input waiting state (S4 is Y and S4), and will be in a screen-display state.

[0058] On the other hand, a push on "EASY" key 18e outputs the display instruction of one screen in the state of the display of an above-mentioned top menu screen (S7). (S4 is Y and S6) Operating this "EASY" key 18e means shifting to the processing which prints the picture displayed on a viewfinder 4 as it is, i.e., the above-mentioned "easy print mode." Hereafter, printing operation of an "easy print mode" is explained.

<Easy print mode> In this mode, if the depression of the "EASY" key 18e is carried out, one picture in the picture photoed with the digital camera 1 (photograph of one coma) will be displayed on a viewfinder 4. For example, if the photograph of 96 sheets was memorized by the image memory 27 as compressed data, after the first photograph "1" is read from an image memory 27 and extension processing predetermined in compression/extension section 26 is performed, it is changed into the video data which corresponds in the video signal generating section 32, and the photograph "1" of the 1st sheet is displayed on a color LCD 35 (viewfinder 4). drawing showing this display state — drawing 6 (a) it is.

[0059] In the state of this display, if the depression of the "+" key 18b is carried out (S8 is Y and S9), the following photograph "2" which the coma delivery instruction was executed and was memorized by (S9) and the image memory 27 will be read, and it will be displayed on a viewfinder 4. In addition, this display state is in the display state of drawing 6 (b), and can display the photograph memorized by the image memory 27 one by one as "3", "4", "5", and ... by carrying out the depression of the "+" key 18b one by one after that (S8 is Y and S9). On the other hand, by carrying out the depression of the "-" key 18a, coma return is carried out to reverse and it is displayed on a viewfinder 4 as a photograph "3", "2", and "1" (S8 is Y and S9). And when the photograph which wishes to print is displayed on a viewfinder 4, the depression of the "SET" key 18c is carried out (S8 is Y). A printing picture is decided by this processing (S10), and CPU40 performs printing processing henceforth.

[0060] On the other hand, in wishing printing of multi-picture features, it carries out the depression of the "EASY" key 18e further in the state of one above-mentioned screen display (S8 is Y). CPU40 will perform the display instruction of a multi-screen, if "EASY" key 18e is pushed (S11). If this instruction outputs, after picture [ of the first four coma ] "1" — "4" is being transmitted by compression/extension section 26 from an image memory 27 and performing predetermined extension processing, a quadrisection screen is displayed on a color LCD 35. Drawing 6 (c) The display state of photograph [ of the first four coma ] "1" — "4" is shown. In addition, like above-mentioned processing, by carrying out the depression of the "+" key 18b, following picture "5" — "8" is displayed ((d) of drawing 6), and, also in the case of this quadrisection screen, picture "9" — "12" and "13" — "16" and ... are displayed one by one by carrying out the depression of the "+" key 18b further. carrying out the depression of the "-" key 18a on the other hand — reverse — coma return — carrying out ... it is displayed as "9" — "12" and "8" — "5" and "4" — "1" (S8 is Y and S9) And when the picture which wishes to print is displayed on a viewfinder 4, "SET" key 18c is pushed like the above-mentioned (S8), and a printing picture is decided (S10).

[0061] Furthermore, in wishing printing of the multi-picture features of 9 division, "EASY" key 18e is again pushed in the state of the multi-picture features of above-mentioned quadrisection (S8 is Y), and it performs a multi-picture-features instruction of nine division (S11). after extension processing which photograph [ of the first nine coma ] "1" — "9" is outputted by this instruction, and corresponds from an image memory 27 by it is performed, while displaying nine split screens on a color LCD 35 — picture [ of the first nine coma ] "1" — "9" — drawing 6 (e) It displays so that it may be shown. In addition, the case of one screen display or a quadrisection screen display of the ability of a picture to be updated every nine coma is the same by carrying out the depression of "+" key 18b or the "-" key 18a (S8, S9). Moreover, when the picture which wishes to print is displayed on a viewfinder 4 in the state of nine split screens, what (S10) "SET" key 18c is pushed (S8 is Y), and a printing picture is decided also for is the same as the above-mentioned.

[0062] Thus, if Form P is inserted in form insertion-cum-the exhaust port 16 of printer equipment 15 after displaying the photograph decided to the viewfinder 4, CPU40 will start printing processing by a sensor's 54 detecting insertion of Form P and outputting a detecting signal to CPU40.

[0063] Drawing which explains this printing processing concretely is the flow chart of drawing 7. If Form P is inserted from form insertion-cum-the exhaust port 16 after pushing "SET" key 18c as mentioned above (Step 1 (ST shows this drawing hereafter)), CPU40 will perform printing processing (ST2). The image data corresponding to one screen or multi-screen displayed on a viewfinder 4 is read from an image memory 27, and this processing is incorporated by the printer 15 through a telecommunication cable 14. The image data incorporated by the printer 15 is once memorized by the image memory 41. Since the image data transmitted from a camera 1 is data with which the image data which consists of a luminance signal and a chrominance signal was compressed, predetermined extension processing is performed in the extension section 42, this is further changed into the print data of Y, M, and C each color, and it memorizes it to the print-data storage region of RAM48.

[0064] Then, the print data of Y, M, and C each color are outputted to a print head 53 in order from the print-data storage region of RAM48, and printing processing to Form P is performed. While the above-mentioned motor 51 for ribbons and the motor 52 for form feeds drive and sending the ink ribbon of yellow (Y), MAZENDA (M), and cyanogen (C) to a print head one by one in the meantime, Form P is sent to the printing section, the dot pattern data developed by the image memory 41 are imprinted in Form P, and color printing is performed in Form P.

[0065] Thus, the form P with which printing was performed is returned to form insertion-cum-the exhaust port 16.

and is discharged outside the plane by the form-feed mechanism in which it does not illustrate. Moreover, discharge of Form P is detected by the sensor 54 and CPU40 knows the printing end (ST3).

[0066] On the other hand, after the depression of the above-mentioned "SET" key 18c, if there is a key input until Form P is inserted in form insertion-cum-the exhaust port 16, the key pushed from the key stroke signal will be judged (ST4 is Y). For example, if the key pushed at this time is "BACK" key 18g, a display state will be returned to a picture just before displaying on the viewfinder 4 (ST5 is Y and ST6). For example, in the case of one screen display, it is as shown in drawing 6 (b). If it is in a display state, it is this drawing (a). It returns to a display state. Moreover, drawing 6 (d) If it is the shown quadrisection screen display (multi-picture features), it is this drawing (c). It returns to a display state. Moreover, if "MENU" key 18f was pushed (ST7 is Y), it will return to the first top menu screen. Moreover, if "EASY" key 18e was pushed (ST8 is Y), it will return to the selection screen state of above-mentioned "EASY" processing.

[0067] The photograph displayed on the viewfinder 4 by the side of a digital camera 1 can be printed without being able to print the picture displayed on the viewfinder 4 as it is, and equipping especially printer equipment 15 with a drop with the printer equipment 15 of this example, by processing as mentioned above. It returns to <a layout and background printing>, next explanation of drawing 4, and menu selection processing is explained. This menu selection processing can shift by carrying out the direct depression of the "SET" key 18c from an above-mentioned top menu screen. That is, in the flow chart of drawing 4, it can shift to the selected processings, such as a layout and background printing processing, and calender printing processing, by carrying out the depression of the "SET" key 18c (S12).

[0068] First, drawing 8 is a flow chart explaining a layout and background printing processing. As mentioned above, if "SET" key 18c is pushed from a top menu screen and a layout and background printing processing are chosen, CPU40 will perform the display instruction of a layout selection picture (Step 1 (STP shows this drawing hereafter)). This processing is processing which displays a layout selection picture on a viewfinder 4, after reading the compressed data of a layout selection picture from ROM46, sending to a digital camera 1 side through a telecommunication cable 14 and elongating by compression/extension section 26.

[0069] Drawing 9 (a) It is drawing showing the state where the above-mentioned layout selection picture was displayed on the viewfinder 4. For example, a layout 1 is an example which prints the picture 56 of one sheet to a background 55, a layout 2 is the example of a layout which superimposed the photograph 58 of two or more sheets arranged in the longitudinal direction to a background 57, and a layout 3 is the example of a layout which superimposed the photograph 60 of two or more sheets arranged to the background 59 lengthwise. Hereafter, it is as layouts 4-6 also being shown in this drawing (a), respectively. An operator chooses the layout which wishes to print in this display state.

[0070] Like the above-mentioned, this selection pushes "+" key 18b or "-" key 18a, things perform it by moving to the layout which wishes Cursor C (STP2 is Y and STP3), and when it moves to the position of arranging [ which Cursor C wishes ], a layout is decided by carrying out the depression of the "SET" key 18c (STP2 is Y and STP4). In addition, three layout selection screens serve as the display 1 of a layout selection screen (2/3) of the 2nd sheet, when it is as shown in drawing 9, and exceeding the display 6 of a layout selection screen (1/3) of the 1st sheet by operation of "+" key 18b. Moreover, when exceeding the display 6 of a layout selection screen (2/3) of the 2nd sheet similarly, it becomes the display 1 of a layout selection screen (3/3) of the 3rd sheet. And when displaying a natural new layout selection screen on a viewfinder 4, the compressed data of the layout selection screen of the 2nd sheet or the 3rd sheet is sent to a digital camera 1 side from ROM46 by control of CPU40, and it displays after extension in compression/extension section 26. An operator pushes "SET" key 18c and chooses arranging [ which he wishes from each format screen of the above-mentioned layout selection screen of three sheets ].

[0071] In addition, when the above-mentioned layout selection screen is displayed on the viewfinder 4 If the depression of the "BACK" key 18g is carried out, the layout selection screen which shows CPU40 to the viewfinder 4 will judge whether it is the layout selection screen (1/3) of 1 screen eye (STP5). If it is the layout selection screen (2/3, 3/3) of 2 screen eye or 3 screen eye (STP5 is N), a display state will be returned to the layout selection screen (1/3) of 1 screen eye (STP6). On the other hand, if the layout selection screen currently displayed on the viewfinder 4 is a layout selection screen (1/3) of 1 screen eye (STP5 is Y), it will be judged as what stopped a layout and background printing processing, and a display state will be returned to a top menu screen (STP5 is S3 of Y and drawing 4).

[0072] Moreover, when which layout selection screen of above-mentioned 1 / 3 - 3/3 was displayed on the viewfinder 4 and "MENU" key 18f is pushed, it returns to a top menu screen (STP2 is S3 of Y and drawing 4).

[0073] A background image is chosen after a layout screen is set up as mentioned above. In addition, when not attaching a background image to a layout screen (STP7 is N), it shifts to the picture selection processing mentioned later immediately (STP8). On the other hand, in adding a background image, it performs the following processings (STP7 is Y, STP9-STP14).

[0074] That is, first, after CPU40 performs the display instruction of a background-image selection screen (STP9), sends the compressed data of the background-image selection screen memorized to ROM46 to a digital camera 1 side and performs extension processing, it is displayed on a viewfinder 4. Drawing 10 is drawing showing the display state. However, the background-image selection screen (1/4) which shows a background-image selection screen in four-sheet a \*\*\*\* and this drawing is displayed as an initial screen. And selection processing of a background image is the same as selection processing of an above-mentioned layout screen, pushes "+" key 18b and carries out a

cursor advanc on the background-image selection screen (1/4) of the 1st sheet. this processing — cursor — background 1->2->3-> — if it moves with ... and a background 6 is reached, the background-image selection screen (2/4) of the 2nd sheet will be read to a viewfinder 4, and if the background 6 of the background-image selection screen (2/4) of the 2nd mor sheet is reached, the background-image selection screen (3/4) of the 3rd sheet will be read to a viewfinder 4 moreover, the thing which the background of each background-image selection scr en is returned (background 6->5->4-> ...), and is done for the depression of the "BACK" key 18g by carrying out the depression of the "-" key 18a — the background-image selection scr en itself — 4/4->3/4-> — it r turns with ... and displays (STP10 is Y, STP12, and STP13) And when the background image to wish is displayed, the background image which cursor directs can be chosen by carrying out the depression of the "SET" key 18c (STP10 is Y and STP14).

[0075] In addition, when above-mentioned "BACK" key 18g is pushed, and the number of the background-image selection screens displayed on the viewfinder 4 is the 1st (1/4), and it returns to a top menu screen (STP10 is Y and STP12 is Y) and "MENU" key 18f is pushed, it returns to a top menu screen (STP10 is S3 of Y and drawing 4 ).

[0076] After choosing a layout screen and its background image as mentioned above, the photography picture displayed on an actual layout screen is chosen. This processing is the next picture selection processing (STP8). The concrete flow chart of this processing is shown in drawing 11 .

[0077] First, after reading the photograph of the 1st sheet currently recorded on the image memory 27 and elongating in a size predetermined in compression/extension section 26, by the video signal generating section 32, it changes into a video signal and the photograph of the 1st sheet is displayed on a viewfinder 4 (Step 1 (U shows this drawing hereafter)). Here, the record picture of the 1st sheet displayed on a viewfinder 4 is the above-mentioned photograph "1." And if the layout screen chosen, for example by above-mentioned processing is the layout 1 shown in above-mentioned drawing 9 , it is the processing which chooses the photograph printed on the layout "1."

[0078] When choosing the photograph which is others, in order to, perform picture selection processing (U3) on the other hand, "+" key 18b or "-" key 18a is operated. for example, — "— + —" — a key — 18 — b — or — "— — a key — 18 — a — operating it — a picture — selection — processing — carrying out — a case — Push "+" key 18b and a record picture is updated one by one ("1" → "2" → "3" → ...). "-" key 18a is pushed, when the record picture which updates a record picture one by one (for example, "96" → "95" → "94" → ...), and wishes for it conversely is displayed, "SET" key 18c is pushed and a record picture is decided (U2 is Y and U4).

[0079] In addition, in a record picture selection screen, if the depression of the "BACK" key 18g is carried out, it will return to a background-image selection screen (U2 is STP9 of Y and drawing 8 ), and if the depression of the "MENU" key 18f is carried out, it will return to a top menu screen (U2 is S3 of Y and drawing 4 ).

[0080] Next, the direction setting processing of a picture is performed. Drawing explaining this processing is the flow chart of drawing 12 . The compressed data of the direction setting screen of a picture remembered that there is a display instruction of the direction setting screen of a picture to ROM46 is sent to a digital camera 1 side, and it displays on a viewfinder 4 (Step 1 (V shows this drawing hereafter)). Drawing 13 is drawing showing the display state. "+" key 18b is pushed in this state, and the direction of the photograph which moves to right and left and prints Cursor C is chosen (V2 is Y and V3). In addition, in this drawing, the character of "A" shows a photograph. And when Cursor C moves in the direction of a picture to wish, the direction of a photograph is determined by carrying out the depression of the "SET" key 18c (V2 is Y and V4).

[0081] In addition, it is the same as that of the above-mentioned which it returns to a front display state when above-mentioned "BACK" key 18g is pushed, and is returned to a top menu screen when "MENU" key 18f is pushed (STP10 is S3 of Y and drawing 4 ).

[0082] If a photograph is also decided as mentioned above, printing processing of a layout and background printing will be performed. Like drawing 14 , to a digital camera 1, a printer 15 receives a transfer of the image data chosen from the digital camera 1 while performing transfer processing of a printing start screen first (Step 1 (W shows drawing 14 hereafter)).

[0083] And a printer 15 carries out extension processing in the extension section 42, is further changed into the print data of Y, M, and C, and is memorized to the print-data storage region of RAM48 while it memorizes the compression image data transmitted from the camera 1 to an image memory 41. And synthetic processing is carried out with the background data similarly chosen according to the arrangement position where the layout data chosen in the picture composition field of RAM48 define these print data. Since background data are memorized by ROM46 as compressed data, they perform extension processing in the extension section 42, and carry out synthetic processing of this with image data. Moreover, this synthetic processing is performed to \*\* of printing of the print data of Y, M, and C in order. Thus, it waits for insertion of Form P, after creating print data to RAM48 (W2).

[0084] However, if there is a key input while waiting for insertion of Form P, it will be judged as what stopped printing processing (W3 is Y), and directed key processing will be performed. For example, if "BACK" key 18g is pushed, it will return to a front screen (W4 is Y and W5), if "MENU" key 18f is pushed, it will return to a top menu screen (W4 is N and W6), and if "EASY" key 18e is pushed, it will shift to the above-mentioned easy printing screen (W6 is N and W7 is Y).

[0085] On the other hand, if Form P is inserted in form insertion-cum-the exhaust port 16 of printer equipment 15 (W2 is Y), printer equipment 15 will perform printing processing (W8). This printing processing transmits a layout and a background printing picture to a print head from RAM48, drives the motor 51 for ribbons, and sends the ink ribbon of yellow (Y), MAZENDA (M), and cyanogen (C) to the printing section while it drives the motor 52 for form feeds according to control of form-feed CPU40 and sends Form P to the printing section. By this processing, printing of

yellow (Y), MAZENDA (M), and cyanogen (C) is performed in Form P one by one, and a color picture is printed by Form P (W9).

[0086] Therefore, without printer equipment 15 having a drop in equipment itself by processing as mentioned above, layout of a photograph and selection processing of a background image can be performed using the viewfinder 4 by the side of a digital camera 1, and printing processing based on the selection result can be performed.

<Calender printing processing>, next calender printing processing are explained using the flow chart of drawing 15. In addition, this calender printing processing can shift by carrying out the depression of the "SET" key 18c from the above-mentioned top menu screen. That is, in the flow chart of drawing 4, after moving to the display of calender printing of cursor, it shifts to calender printing processing by carrying out the depression of the "SET" key 18c (S12).

[0087] If it shifts to calender printing processing, CPU40 will perform the display instruction of a format selection screen (Step 1 (T shows this drawing hereafter)). After this processing reads the compressed data of a format selection screen from ROM46, sends it to a digital camera 1 side and performs extension processing like the above-mentioned, it displays a format selection screen on a viewfinder 4.

[0088] Drawing 16 is drawing showing the state where the above-mentioned format selection screen was displayed on the viewfinder 4. For example, it is the composition which it is the composition which it is the composition which display 1 arranges the photograph section 60 on the left-hand side of a screen, and arranges the calender section 61 on the right-hand side of a screen, and, as for display 2, width of face arranges the latus photograph section 62 on the left-hand side of a screen a little than display 1, and arranges the calender section 63 on the right-hand side of a screen, and display 3 arranges the photograph section 64 to the screen up side, and arranges the calender section 65 to the screen down side. In addition, it is composition as display 4 is also shown in this drawing.

[0089] An operator chooses the format of the calender which wishes to print in this display state, this — selection — processing — the above-mentioned — the same — "— + —" — a key — 18 — b — or — "— —" — a key — 18 — a — pushing — cursor — wishing — a layout — moving — things — things — carrying out (T2 being Y and T3) — cursor — wishing — a format — a position — having moved — a time — "— SET —" — a key — 18 — c — a depression — In addition, returning to a top menu screen is the same as the above-mentioned explanation by carrying out the depression of "MENU" key 18f or the "BACK" key 18g (T2 is S3 of Y and drawing 4).

[0090] Thus, after deciding the format of calender printing, picture selection processing is performed like the above-mentioned (T5). This processing is processing which chooses the photograph inserted in the photograph sections 60 and 62 of a calender format etc. Specifically, processing according to the flow chart of above-mentioned drawing 11 is performed. That is, after reading the record picture of the 1st sheet first recorded on an image memory 27 and elongating in a size predetermined in compression/extension section 26, the record picture "1" of the 1st sheet is displayed on a viewfinder 4 (U1). Here, the photograph of the 1st sheet displayed on a viewfinder 4 is "1", for example, as for the picture after printing, a photograph "1" will be printed by the photograph sections 60 and 62 of a calender format etc. if this photograph "1" is chosen.

[0091] Moreover, in inserting in other photographs, it performs picture selection processing (U3). Like the above-mentioned, operate "+" key 18b and "-" key 18a, for example, push "+" key 18b, and a record picture is updated one by one ("1" → "2" → "3" → ...). "-" key 18a is pushed, a record picture is updated one by one conversely (for example, "96" → "95" → "94" → ...), and a photograph is chosen. And the selected photograph is decided by the depression of "SET" key 18c.

[0092] Next, the direction setting processing of a picture is performed (T6). This processing is the same as what was explained with the flow chart of above-mentioned drawing 12, and the direction of the photograph to print is determined. After choosing the format of calender printing, and a photograph as mentioned above, setting processing of name of an era is performed. This processing performs the display instruction of the setting screen of a year (T7), and after reading the compressed data of the setting screen of a year from ROM46, sending to a digital camera 1 and carrying out extension processing by control of CPU40 at a predetermined size, it displays it on a viewfinder 4.

Drawing 16 (a) It is drawing showing this display state (T8 is Y and T9), the display on the cursor C which directs the position in A.D. 2000 in this display state if the depression of the "+" key 18b is carried out — 2001 → 2002 → 2003 → — if it updates with ... and the depression of the "-" key 18a is carried out — reverse — 1999 → 1998 → 1997 → — it updates with ... And when displaying wished A.D., "SET" key 18c is pushed and A.D. of a calender is determined (T8 is Y and T10).

[0093] Thus, if setting processing of the name of an era of A.D. is completed, next, CPU40 will perform selection processing of the "moon" to print (T11). This processing also outputs the indicative data of the "moon" in which December is shown to a viewfinder 4 from ROM46, for example, and as shown in drawing 16 (c), it displays it (T12 is Y and T13), if the depression of the "+" key 18b is carried out in this state — the display on Cursor C — December → January → February → — if it changes with ... and the depression of the "-" key 18a is carried out — the display on the cursor C — reverse — December → November → October → — it changes with ...

[0094] Thus, when displaying the "moon" which the display on the cursor C which changes one by one wishes to have, the "moon" to print is decided by carrying out the depression of the "SET" key 18c.

[0095] Thus, decision of the A.D. name of an era and the "moon" of the name of an era performs creation processing of calender data (T15). That is, CPU40 reads the compressed data of the calender which knows the "moon" which the A.D. name of an era displayed on a viewfinder 4 and its name of an era display, for example, corresponds from ROM46, and develops calendar data for this compressed data to RAM48 after extension in the extension section 42. This calender creation processing creates the calender data of the appointed moon

automatically by specifying a year and the moon by the calender creation program memorized to ROM46, and you may make it us the character pattern data of CG of ROM46 as an alphabetic data of this calender data. [0096] The above-mentioned calender data are compounded for every color of Y, M, and C in the print-data creation field of a selection picture and RAM48 transmitted from a camera 1 according to the selected calender format, and print data are created. And drawing 16 (c) A print processor-limited state is display d so that it may be shown.

[0097] Then, if Form P is inserted in form insertion-cum-the exhaust port 16 of printer equipment 15, printer equipment 15 will perform printing processing (T16). This printing processing drives the motor 52 for form feeds like the above-mentioned according to control of CPU40. Send Form P to the printing section and the calender print data which compounded the calender of a photography picture and the moon from RAM48 to the print head are transmitted. The motor 51 for ribbons is driven, the ink ribbon of yellow (Y), MAZENDA (M), and cyanogen (C) is printed in Form P one by one, fixing processing is performed and a color picture is printed in Form P.

[0098] Therefore, calender printing of the format chosen based on the selection picture of calender printing displayed on the viewfinder 4 by the side of a digital camera 1 can be performed, without printer equipment 15 having a drop in equipment itself by processing as mentioned above.

<Card printing processing>, next card printing processing are explained using the flow chart shown in drawing 18. In addition, this card printing processing also shifts by carrying out the depression of the "SET" key 18c from the above-mentioned top menu screen.

[0099] If it shifts to card printing processing, the display-processing instruction of a format selection screen is performed first (Step 1 (K shows this drawing hereafter)), and after carrying out extension processing of the compressed data of the format selection screen memorized to ROM46, it will display on a viewfinder 4.

[0100] Drawing 19 is drawing which displays the format selection screen of above-mentioned card printing processing. For example, the photograph section 67 is located in the center of a screen, and, as for the display 1, the background is drawn on the surroundings. Moreover, the photograph section 68 is located in the center of a screen (to inside of a circular background), and, as for the display 2, the background is drawn on the surroundings. In addition, it is as display 3 and display 4 also being shown in this drawing. An operator chooses the format of the postcard which wishes to print in this display state. Like the above-mentioned, this selection processing pushes "+" key 18b or "-" key 18a, and things perform it by moving to the layout which wishes cursor. For example, "+" key 18b is pushed (for Y and K3, N and K5 are [ K2 ] Y), Cursor C is shifted one by one, and it moves one by one with display 1->2->3->4. Moreover, when Cursor C is pointing to the display 4 of a format selection screen (1/2) of the 1st sheet, judgment (K3) is set to Y and switches to the next selection screen (K3 is Y and K4).

[0101] Moreover, "-" key 18a is pushed conversely, Cursor C is shifted one by one, and it moves one by one with display 4->3->2->1 (K2 is Y and K6 is N and K8). Moreover, while Cursor C is pointing to the display 1 of a format selection screen (2/2) of the 2nd sheet, judgment (K6) is set to Y, and cuts and changes to a front selection screen (K7).

[0102] Thus, after moving to the format picture which wishes Cursor C, the format of card printing decides "SET" key 18c by carrying out a depression (K9). Next, picture selection processing is performed (K10). This picture selection processing is processing according to the flow chart shown in above-mentioned drawing 11, and is processing which chooses the photograph which reads the photograph recorded on an image memory 41, displays on a viewfinder 4, and is printed in the above-mentioned photograph section 67 and 68 grades. "+" key 18b and "-" key 18a are operated, "SET" key 18c is pushed and this processing also decides them, after choosing the photograph to choose.

[0103] Next, the direction setting processing of a picture is performed (K11). This processing is also processed according to the flow chart of above-mentioned drawing 12, and the direction of a photograph is chosen. After the photograph inserted in the format of card printing processing and into it as mentioned above is decided (K12), setting processing of name of an era is performed. The display instruction of the setting screen of a year is performed like [ this processing ] \*\*\*\* (K13). "+" key 18b — pushing — name of an era — every [ 1 / + ] — incrementing (K14 — Y —) K15 and "-" key 18a are pushed, and if the name of an era which carries out the decrement of the name of an era every [ -1 / - ] (K14 is Y and K16), and wishes it is displayed, the name of an era which pushes "SET" key 18c and is inserted in the case of card printing processing will be decided (K17). Thus, the settled name of an era can be read from character JUENERETA CG of ROM46 as character pattern data.

[0104] Moreover, it is ordered CPU30 so that the compressed data of the photograph chosen to CPU30 of a digital camera 1 may be read from an image memory 27 and may be transmitted. The compression image data transmitted from the camera 1 is once memorized to an image memory 41, it carries out extension processing of this in the extension section 42, changes it into the print data of Y, M, and C, and is memorized to the print-data storage region of RAM48. And synthetic processing of each print data of these Y, M, and C is carried out with the character pattern data of the name of an era which carried out [ above-mentioned ] a setup in the picture composition processing field of RAM48. Then, a print processor-limited state is displayed. In addition, processing when "EASY" key 18e, "MENU" key 18f, and "BACK" key 18g are pushed in the meantime is the same as the above-mentioned example.

[0105] Then, if Form P is inserted in form insertion-cum-the exhaust port 16 of printer equipment 15, printer equipment 15 will perform printing processing (K18). This printing processing is the same as that of the above-mentioned, according to control of CPU40, the motor 52 for form feeds and the motor 51 for ribbons are driven, the ink of the ink ribbon of yellow (Y), MAZENDA (M), and cyanogen (C) is imprinted in Form P one by one, and a color

picture is printed in Form P.

<Mini-label printing processing>, next mini label printing processing are explained using the flow chart shown in drawing 20. In addition, this mini label printing processing also shifts by carrying out the depression of the "SET" key 18c from the above-mentioned top menu screen.

[0106] If it shifts to this mini label printing processing, the display-processing instruction of the illustration selection screen of a mini label is performed first (Step 1 (M shows hereafter)), and after carrying out extension processing of the compressed data of the format selection screen of the mini label memorized to ROM46, it will display on a viewfinder 4.

[0107] Drawing 21 (a) It is drawing showing the state where the format selection screen of a mini label was displayed. There are two format selection screens of a mini label, and the format screen of six mini labels of a background of displays 1-6 is drawn on the format selection screen (1/2, 2/2), respectively.

[0108] An operator chooses the format of the mini label which wishes to print in this display state. Like the above-mentioned, this selection processing pushes "+" key 18b or "-" key 18a, and things perform it by moving to the mini label which wishes Cursor C. For example, "+" key 18b is pushed (M2 is Y and M3 is N and K4), and cursor is shifted one by one with display 1->2->3->4. Moreover, while Cursor C is pointing to the display 4 of a format selection screen (1/2) of the 1st sheet, judgment (M3) is set to Y and switches to the next selection screen (M3 is Y and M5).

[0109] moreover — reverse — "-" key 18a — pushing — Cursor C — one by one — shifting — display 6->5->4-> — it moves one by one with ... (M2 is Y and M6 is N and M7) Moreover, while cursor is pointing to the display 1 of a format selection screen (2/2) of the 2nd sheet, judgment (M6) is set to Y, and cuts and changes to a front selection screen (M8).

[0110] Thus, after moving to the format picture which wishes cursor, the format of mini label printing is decided by carrying out the depression of the "SET" key 18c (M9).

[0111] Next, a photograph display is performed (M11). This display is the same as that of the above-mentioned, reads a photograph from an image memory 27, and displays it on the viewfinder 4 after extension processing, and the photograph which operates and wishes "+" key 18b and "-" key 18a is chosen (M11 is Y, M12, or M13). And a photograph is decided by carrying out the depression of the "SET" key 18c (M14).

[0112] Print processing is performed after choosing the photograph inserted in the format of mini label printing processing, and into it as mentioned above (M15). If this processing is the same as the processing shown in above-mentioned drawing 14 and Form P is inserted in form insertion-cum-the exhaust port 16 of printer equipment 15, printer equipment 15 will perform printing processing. In addition, drawing 21 (b) An example of the mini label printed by above-mentioned mini label printing is shown.

<Index (list display) printing processing>, next index printing processing are explained using the flow chart shown in drawing 22. In addition, this index printing processing also shifts by carrying out the depression of the "SET" key 18c from the above-mentioned top menu screen.

[0113] First, in this index printing processing, CPU40 receives the information on the record picture memorized to an image memory 27 from a digital camera 1 side (Step 1 (N shows this drawing hereafter)). And completion of reception of the information on a photograph performs the transfer output and display instruction of the screen for coma information displays (N2 is Y and N3). By this instruction, CPU40 outputs the index screen compressed from ROM46 to a digital camera 1 side, and displays it on a viewfinder 4. Moreover, that it should calculate the photograph of how many sheets the photograph of how many sheets was transmitted by normal mode from the information on an above-mentioned photograph, and was transmitted in fine mode, and this data should be displayed on the index screen read from ROM46, CPU40 outputs this data to a digital camera 1 side, and displays it on the index picture displayed on the viewfinder 4 (N4). drawing showing the display state on the viewfinder 4 at this time — drawing 23 (a) it is .

[0114] In addition, this drawing (b) It is an example of a display in the case of being the digital camera which only normal mode can memorize [ of a photograph ] by the model connected to the printer equipment 15 of this example. In this display state, an operator performs definite processing of a list screen by carrying out the depression of the "SET" key 18c (N5 is Y), and outputs the move instruction of a printing start screen (N6). The compressed data of the printing start screen read from ROM46 according to this instruction is outputted to a digital camera 1 side, and is displayed on a viewfinder 4. drawing showing the display state on the viewfinder 4 at this time — drawing 23 (c) it is .

[0115] Then, if Form P is inserted in form insertion-cum-the exhaust port 16 of printer equipment 15, printer equipment 15 will perform printing processing (N7 is Y and N9). This printing processing is the same as that of the above-mentioned; it drives the motor 52 for form feeds, and the motor 51 for ribbons, prints the ink ribbon of yellow (Y), MAZENDA (M), and cyanogen (C) in Form P one by one, performs fixing processing, and prints a color picture in Form P (N10).

[0116] In addition, it is the same as the example of the above-mentioned [ processing when "EASY" key 18e, "MENU" key 18f, and "BACK" key 18g are pushed in the meantime ] (N8 is Y). Printing processing of the list picture can be carried out with printer equipment 15, without printer equipment 15 having a drop in equipment itself by processing as mentioned above.

[0117] In addition, as mentioned above, since printer equipment 15 can acquire the information on the photograph memorized to an image memory 27 from a digital camera 1, it can calculate the photography number of sheets which can further be photoed, for example by CPU40, and can also display it on a viewfinder 4. Thus, efficient use of a

digital camera 1 is also attained by displaying. In addition, in explanation of the above-mentioned example of an operation gestalt, although the example of KORAJI is not explained concretely, in this case, it is the almost same processing as postcard printing processing, and the picture for printer operation displayed on a viewfinder 4 will be in the display state shown in drawing 24. And a format is chosen, a photograph is chosen and printer equipment 15 performs printing processing.

[0118]

[Effect of the Invention] Since according to this invention the display usually prepared in a digital camera is used, a layout setup for printing processing etc. is displayed and setting processing is performed as explained to the detail above, a display is not needed for a printer equipment side, but printer equipment can be miniaturized.

[0119] Moreover, since printer equipment is connected with a direct digital camera and printing processing can be performed, without minding the personal computer which was the need conventionally, a system can be miniaturized and operation can also be simplified.

[0120] Moreover, the picture for printer operation displayed on a digital camera can display a number etc., selection of a format is easy for it and its operability improves. Moreover, the software of the exclusive use for linking a personal computer and a digital camera also becomes unnecessary by having made the personal computer unnecessary.

[0121] Furthermore, printing operation can be performed easily, looking at the display by the side of a camera, whether it is what has the inadequate display of a printer small or is the case where a display does not exist at all, since the display means of the digital camera which combines a finder function and a value monitor can be used as a monitor of the indicative data about printing operation of a printer.

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[Translation done.]

## \* NOTICES \*

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1. This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.\*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

## DESCRIPTION OF DRAWINGS

## [Brief Description of the Drawings]

[Drawing 1] It is the appearance perspective diagram showing the state where the electronic still camera and printer in a gestalt of 1 operation were connected, and is (a). Drawing and (b) which show an electronic still camera It is drawing showing a printer.

[Drawing 2] (a) shows the circuit block diagram of a digital camera, and (b) shows the circuit block diagram of printer equipment.

[Drawing 3] It is drawing showing the connection composition of a typical member in a driver or a sensor.

[Drawing 4] It is a flow chart explaining processing operation of this example of an operation form.

[Drawing 5] It is drawing showing the state where the top menu screen was displayed in the viewfinder of a digital camera.

[Drawing 6] It is drawing showing the display state of a viewfinder.

[Drawing 7] It is drawing explaining the printing processing in an "easy print mode."

[Drawing 8] It is a flow chart explaining processing of a layout and background printing.

[Drawing 9] It is the selection screen of a layout picture.

[Drawing 10] It is the selection screen of a background printing picture.

[Drawing 11] It is a flow chart explaining picture selection processing.

[Drawing 12] It is a flow chart explaining the direction setting processing of a picture.

[Drawing 13] It is the selection screen which chooses the direction of a picture.

[Drawing 14] It is a flow chart explaining the printing processing in the case of menu processing.

[Drawing 15] It is a flow chart explaining processing of calender printing.

[Drawing 16] It is the display screen of calender printing.

[Drawing 17] It is the picture which chooses name of an era and the "moon" of the name of an era.

[Drawing 18] It is a flow chart explaining processing of card printing.

[Drawing 19] It is the selection screen of card printing.

[Drawing 20] It is a flow chart explaining processing of mini label printing.

[Drawing 21] (a) is drawing showing the selection screen of mini label printing, and (b) is drawing showing the example of the mini label after printing processing.

[Drawing 22] It is a flow chart explaining processing of list printing.

[Drawing 23] (a) shows the example of a display of list printing, (b) shows the example of a display of list printing, and (c) is drawing showing the example of a display of a print waiting state.

[Drawing 24] It is drawing showing the example of a display of the selection screen of KORAJI printing.

## [Description of Notations]

1 Digital Camera

2 Camera Book Soma

3 Lens Unit Section

4 View Finder

5 Electric Power Switch

6 Mode Change-over Switch

9 Shutter Release

11 The "+" Key

12 The "[ - ]" Key

13 Communication Terminal

14 Telecommunication Cable

15 Printer

P Recording paper

16 Form Insertion-cum-Exhaust Port

17 Control Panel

18 Operation Key

18a "[ - ]" key

18b "+" key

18c "SET" key

18d "POWER" key

18e "EASY" key  
18f "MENU" key  
18g "BACK" key  
19 Communication Terminal  
20 Timing Generator  
21 CCD  
22 Driver  
24 A/D Converter  
25 DRAM  
26 Compression/Extension Section  
27 Image Memory  
28 ROM  
29 RAM  
30 CPU  
31 Key Input Section  
32 Video Signal Generating Section  
33 VRAM  
34 D/A Converter  
35 Color LCD (Liquid Crystal Display)  
36 Amplifier  
37 CG  
38 I/O Port  
40 CPU  
41 Image Memory  
42 Extension Section  
43 Selection Section  
44 Key Input Section  
45 I/O Port  
46 ROM  
47 Color Printer Section  
48 RAM  
49 Bus  
50 Motor for Ribbons  
51 Motor for Heads  
52 Form-Feed Motor  
53 Print Head  
54 Sensor  
55, 57, 59 Background  
56, 58, 60, 62, 64, 67, 68 Photograph  
61, 63, 65 Calender section

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[Translation done.]

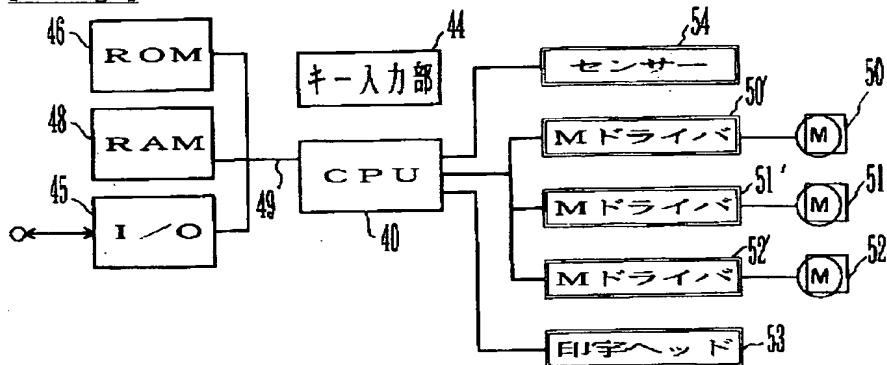
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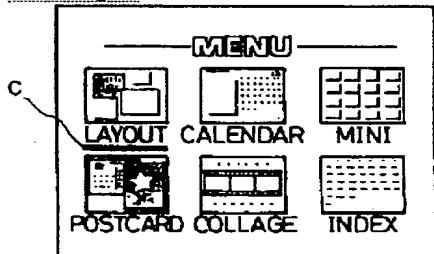
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## DRAWINGS

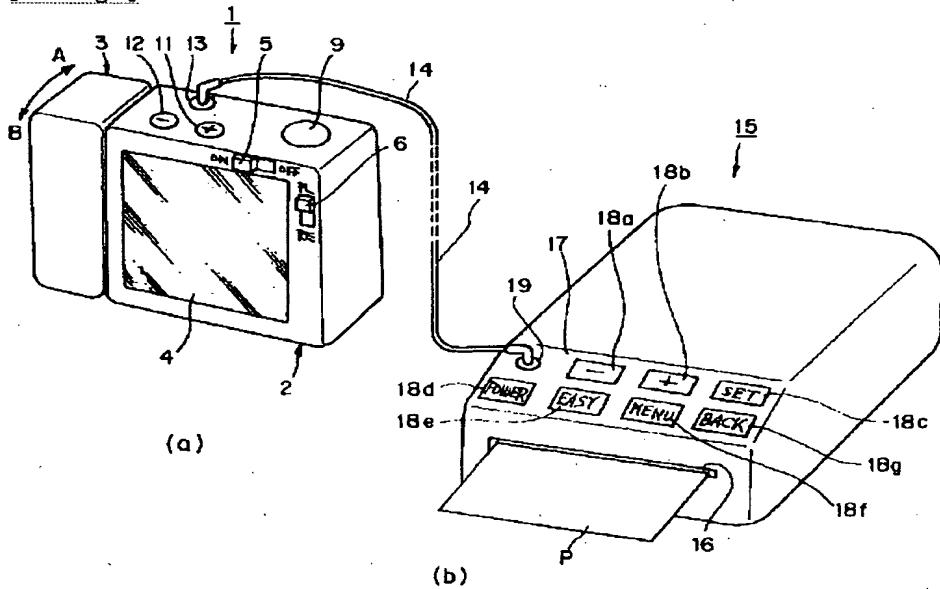
## [Drawing 3]



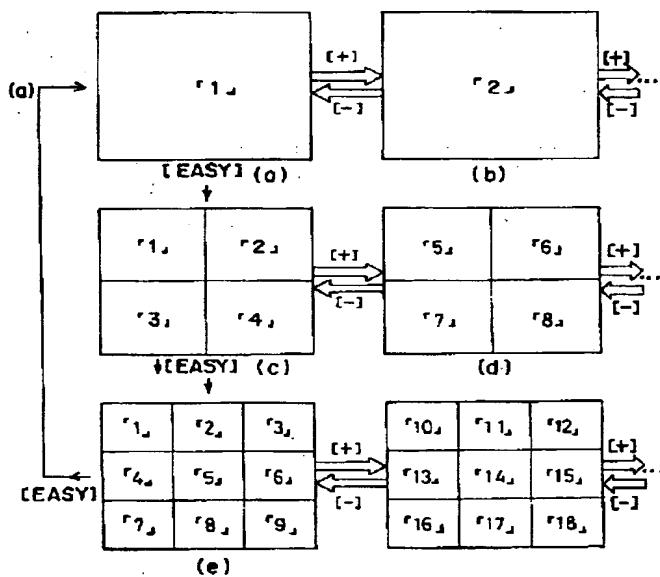
## [Drawing 5]



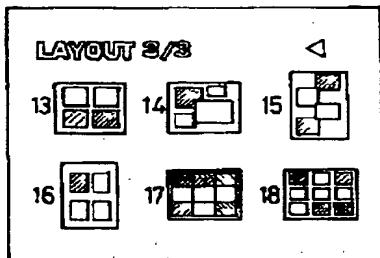
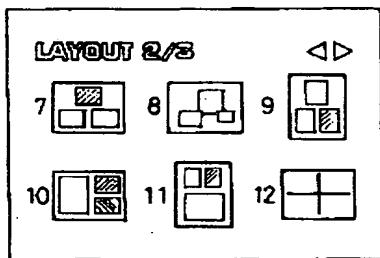
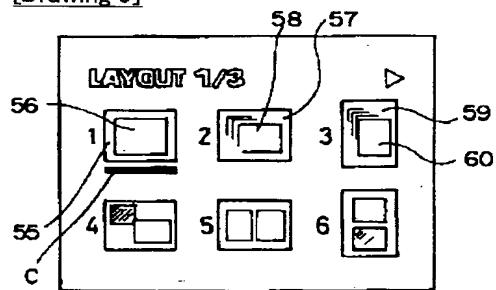
## [Drawing 1]



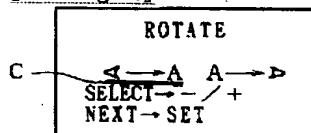
## [Drawing 6]



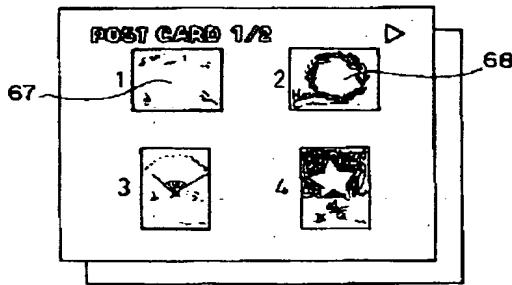
[Drawing 9]



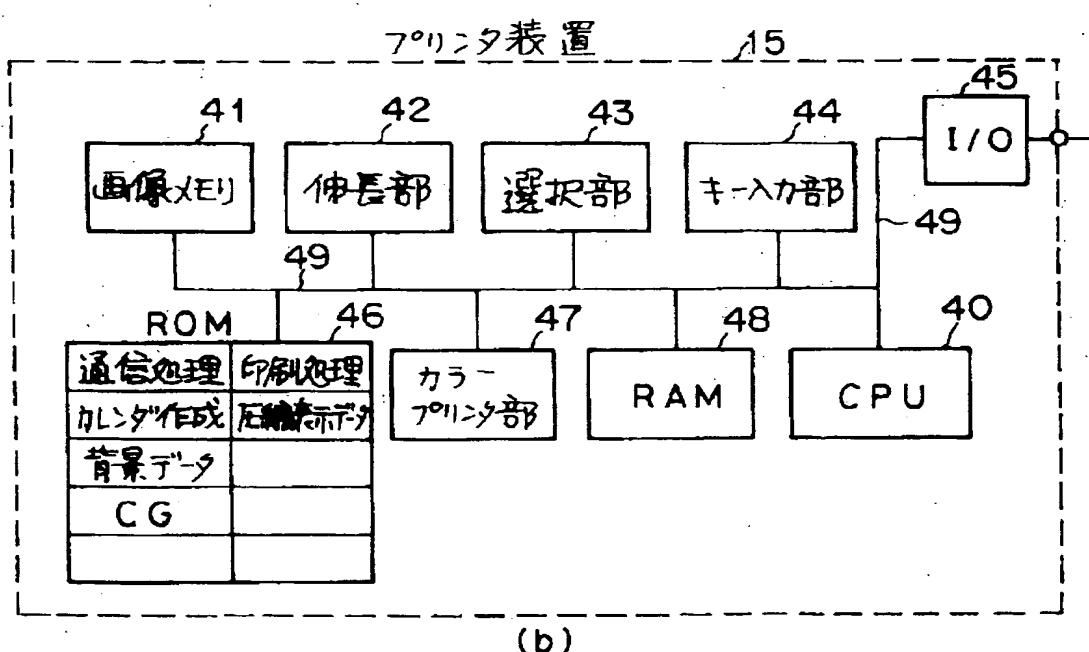
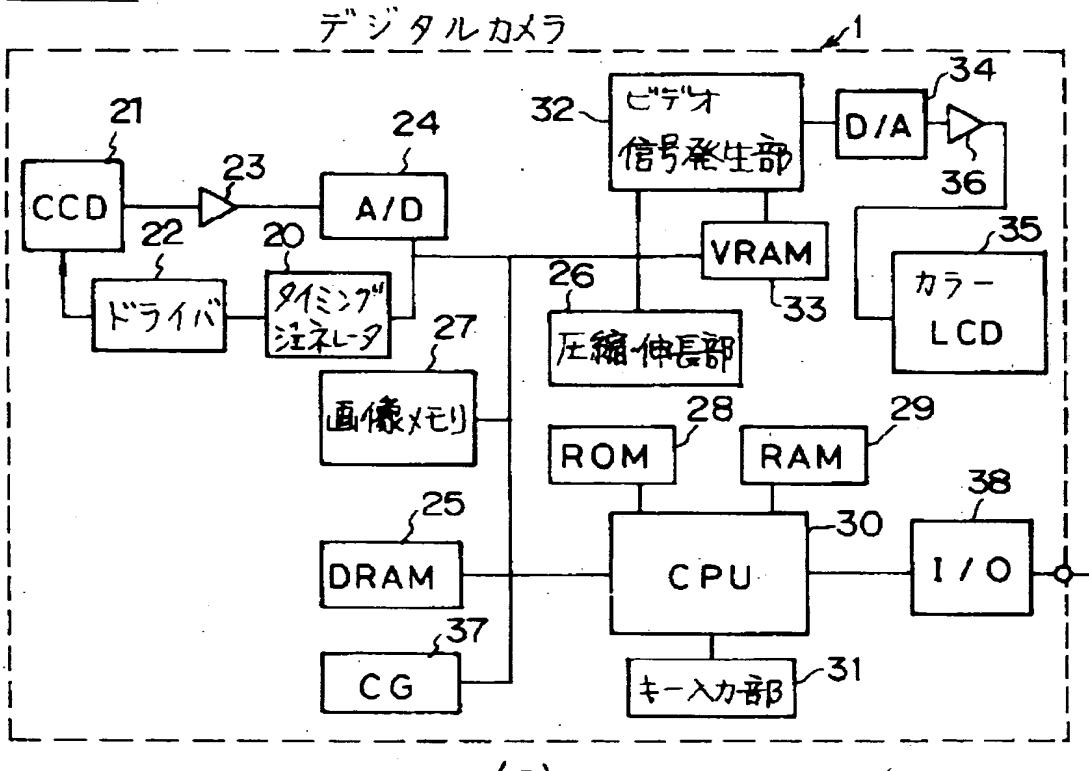
[Drawing 13]



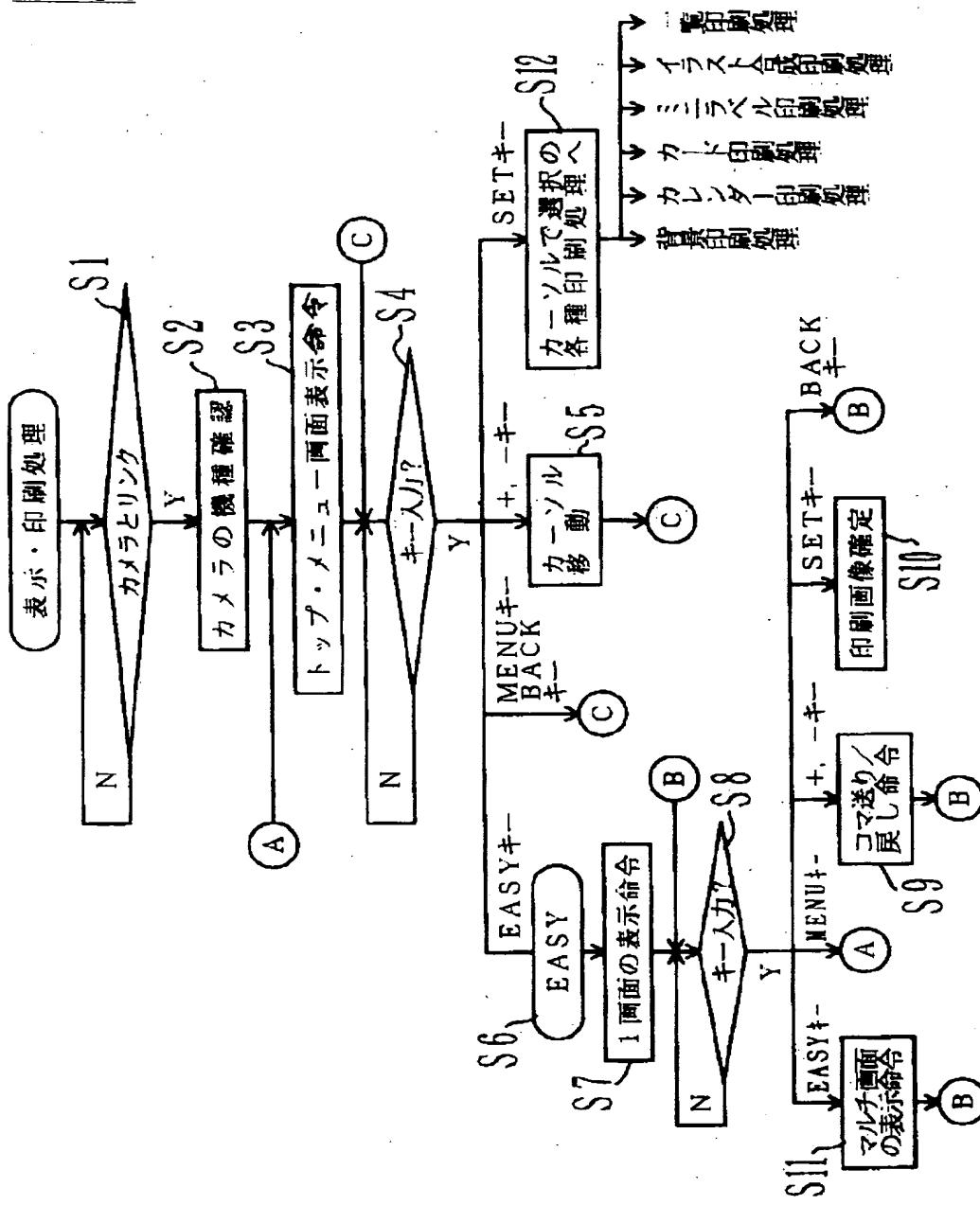
[Drawing 19]



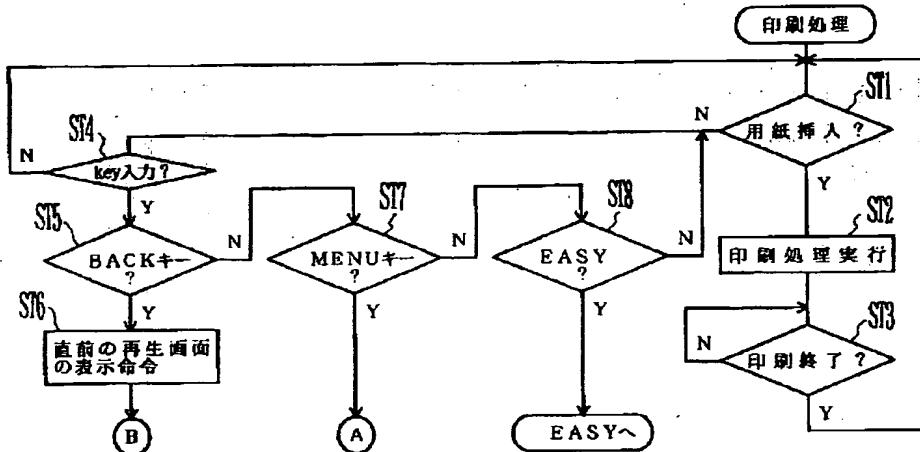
[Drawing 2]



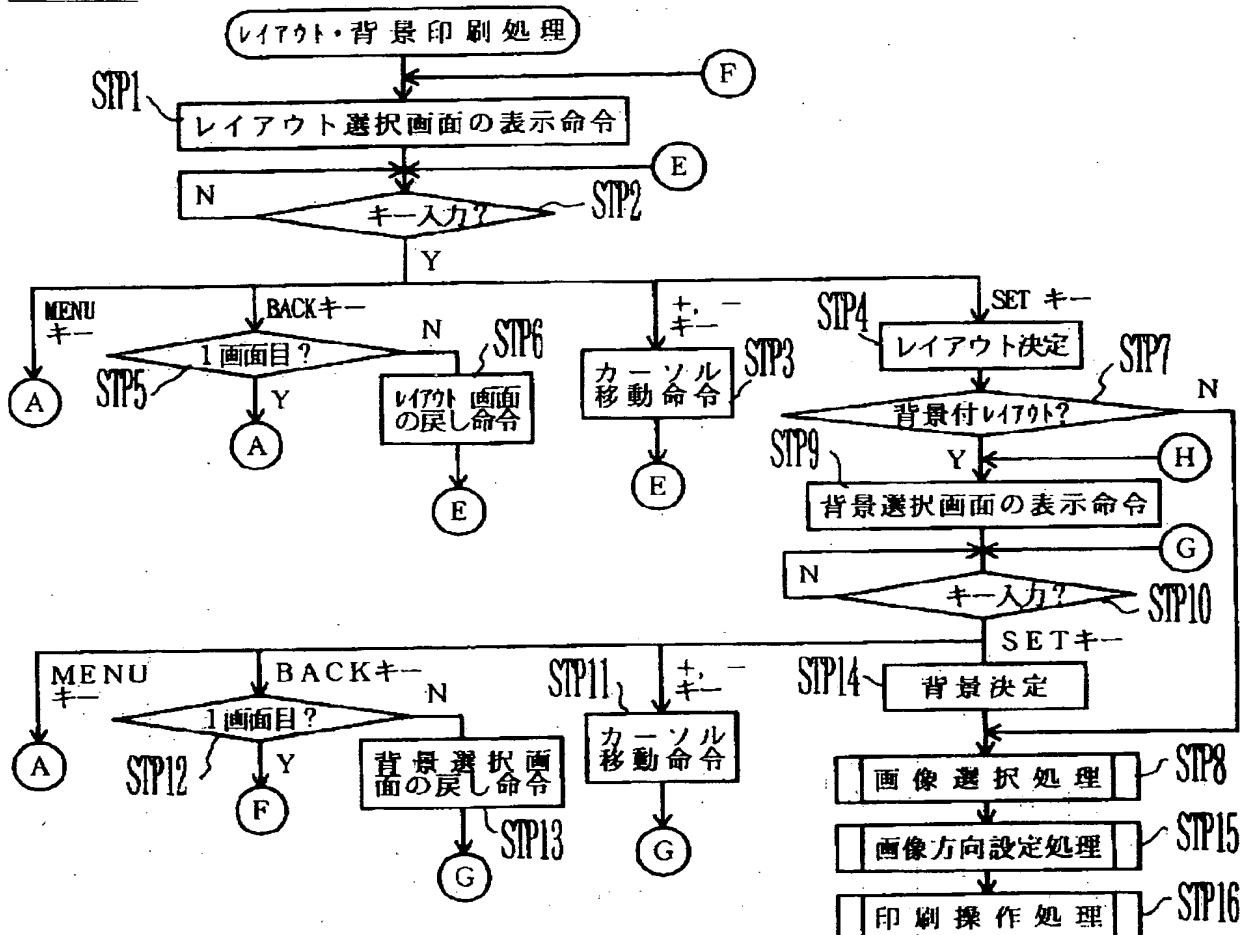
[Drawing 4]



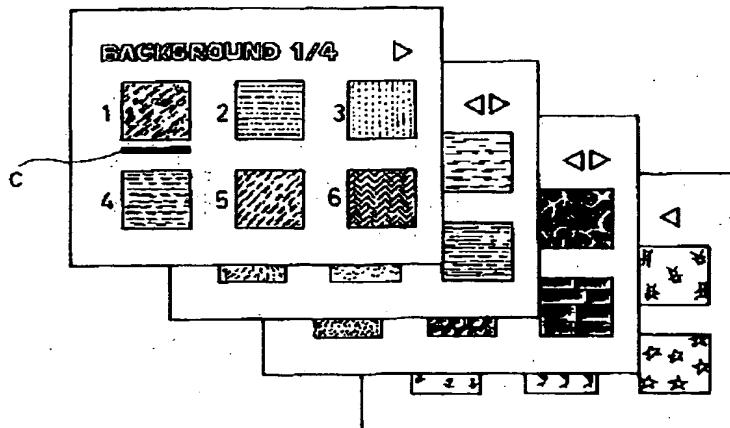
[Drawing 7]



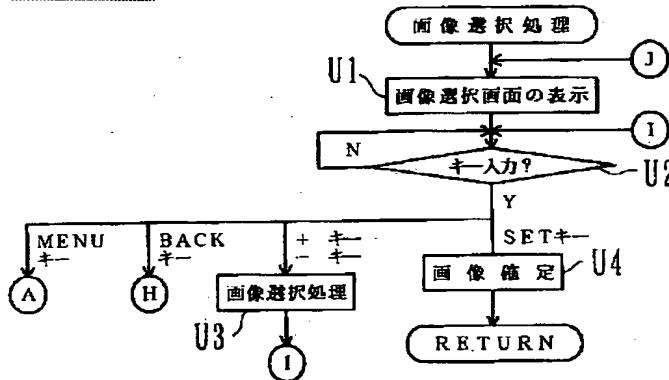
[Drawing 8]



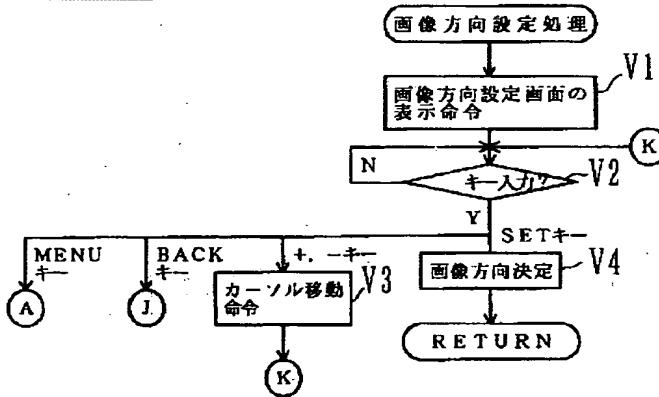
[Drawing 10]



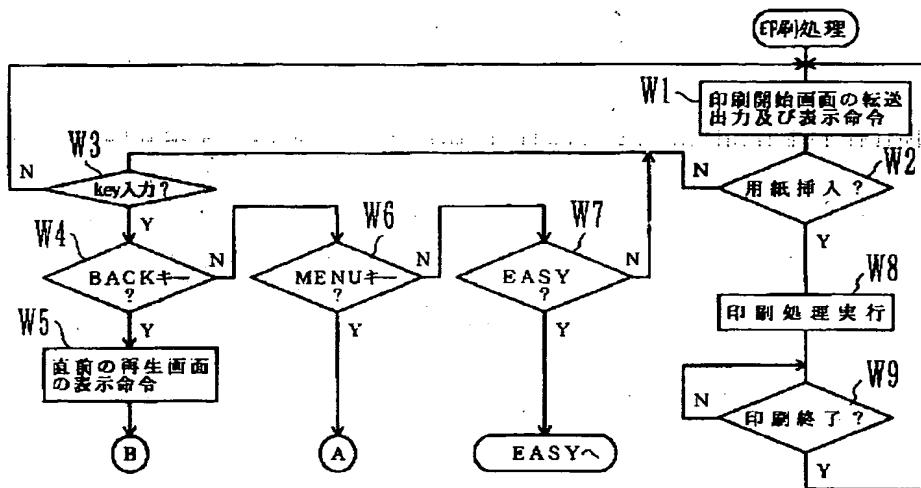
[Drawing 11]



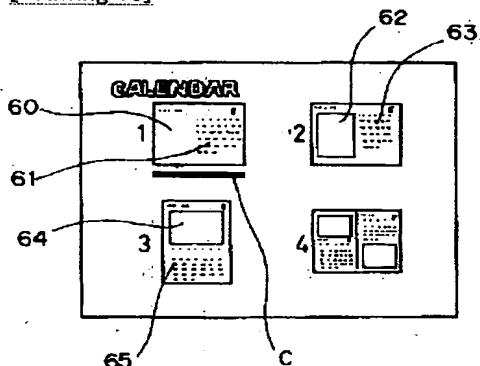
[Drawing 12]



[Drawing 14]



[Drawing 16]



[Drawing 17]

YEAR INPUT  
[ 2000 ]  
SELECT → -/+  
NEXT → SET

(a)

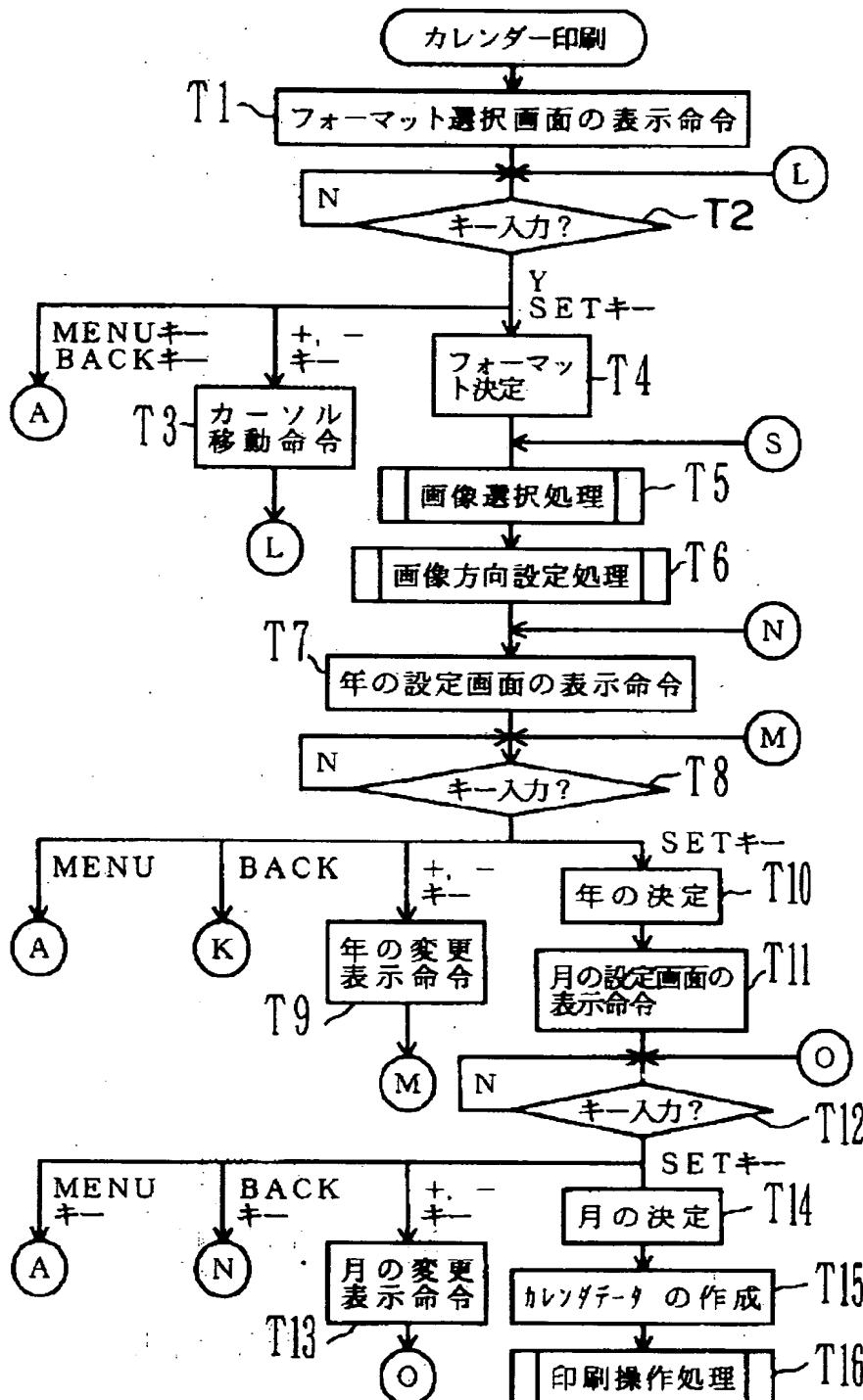
MONTH INPUT  
[ 12 ]  
SELECT → -/+  
NEXT → SET

(b)

PRINT ?  
YES → LOAD PAPER  
NO → MENU

(c)

[Drawing 15]



[Drawing 23]

INDEX PRINT  
NORMAL \*\*\*PAGES  
FINE \*\*PAGES  
OK→SET  
EXIT→MENU

(a)

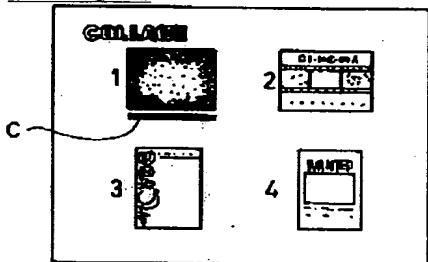
INDEX PRINT  
\*\*PAGES  
OK→SET  
EXIT→MENU

(b)

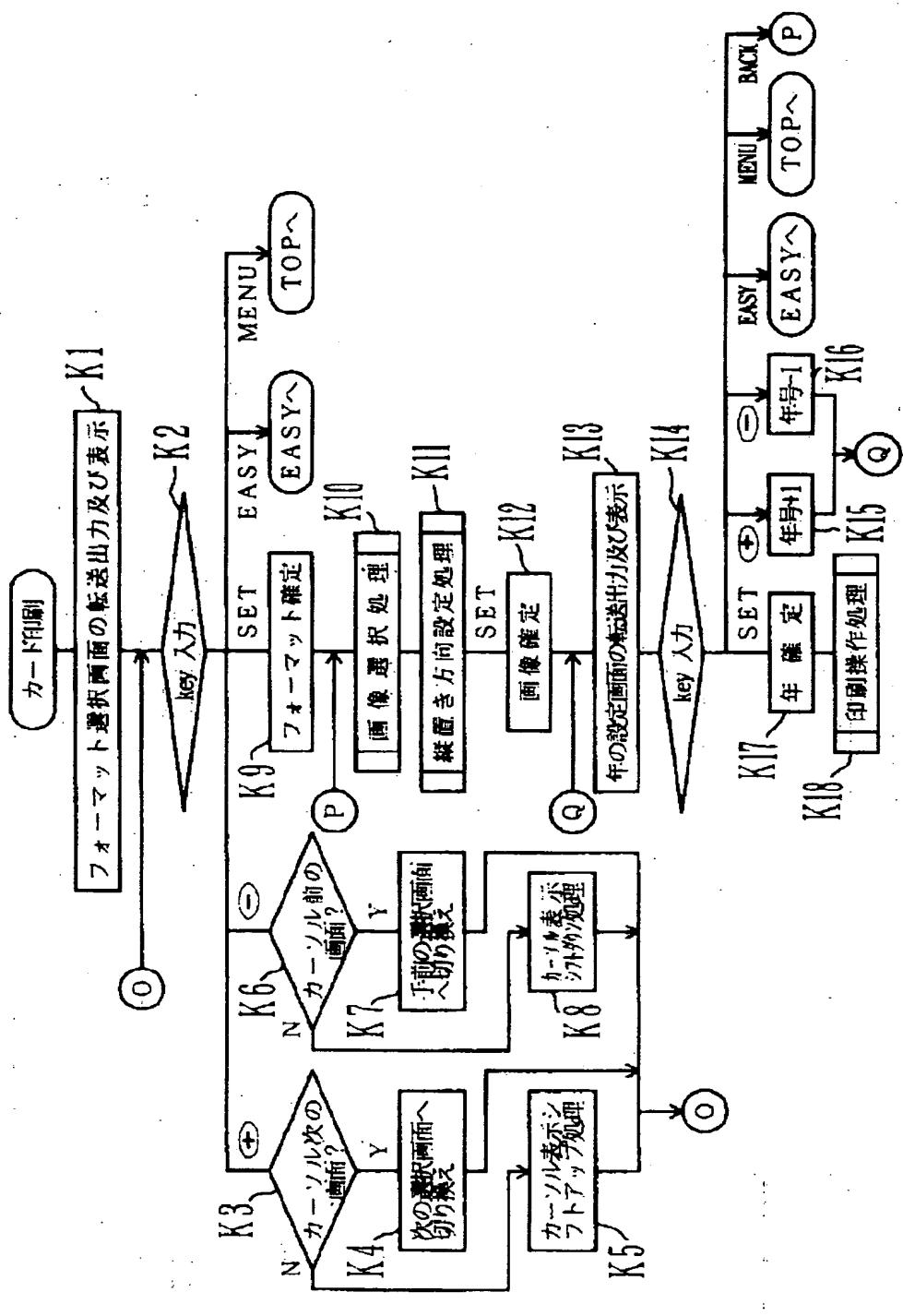
PRINT ?  
YES → LOAD PAPER  
NO → MENU

(c)

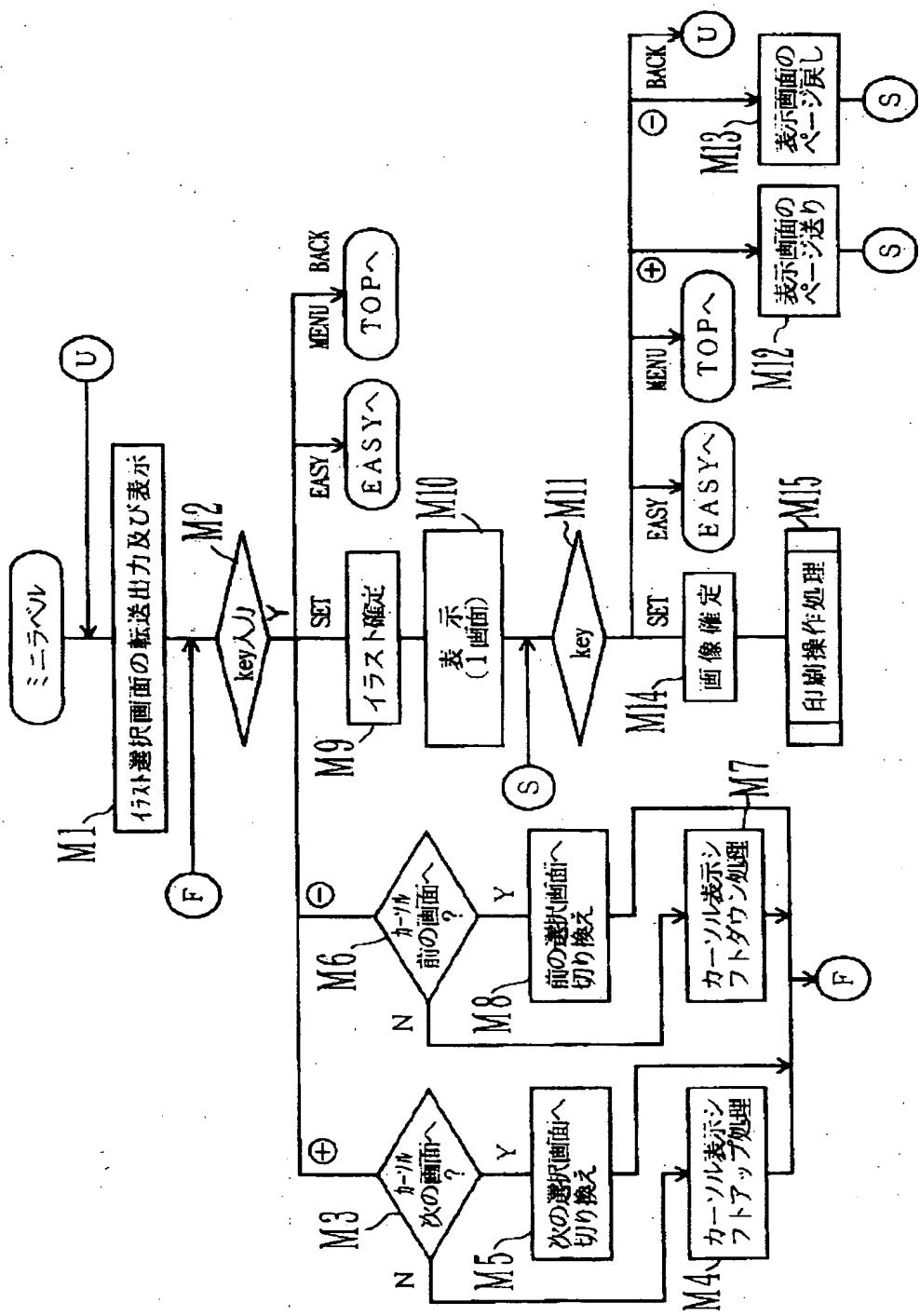
[Drawing 24]



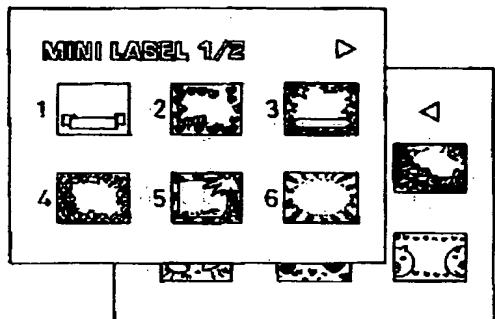
[Drawing 18]



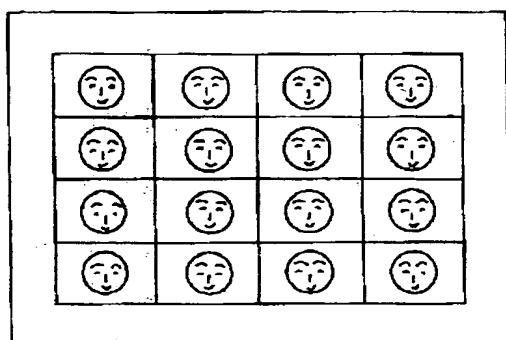
[Drawing 20]



[Drawing 21]

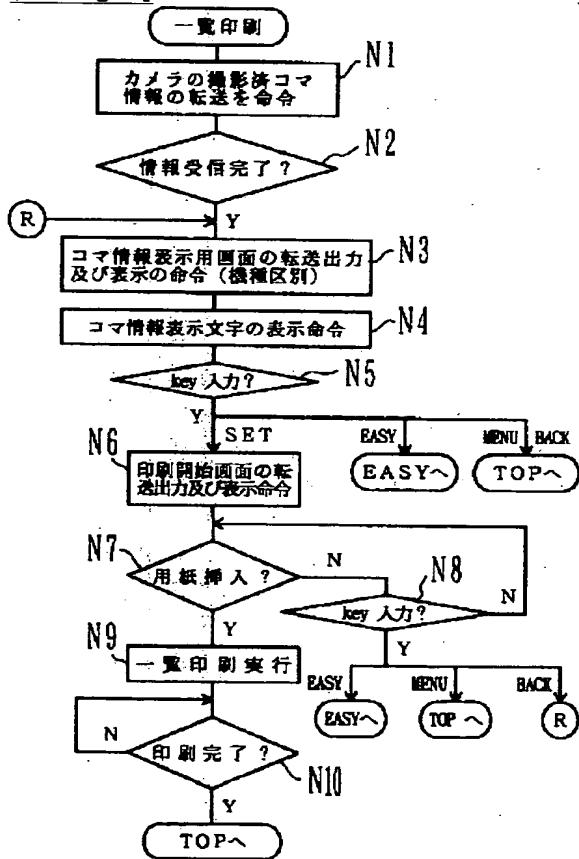


(a)



(b)

## [Drawing 22]



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[Translation done.]